

TRANSCRIPT OF RECORD

SUPREME COURT OF THE UNITED STATES

OCTOBER TERM, 1951

No. 11

THE UNITED STATES, PETITIONER

VS.

**MARTIN WUNDERLICH, ANN M. WUNDERLICH,
MARIE WUNDERLICH, ET AL.**

**ON WRIT OF CERTIORARI TO THE UNITED STATES COURT
OF CLAIMS**

**PETITION FOR CERTIORARI FILED FEBRUARY 28, 1951
CERTIORARI GRANTED MAY 7, 1951**

SUPREME COURT OF THE UNITED STATES

OCTOBER TERM, 1950

No. 584

THE UNITED STATES, PETITIONER,

vs.

MARTIN WUNDERLICH, ANN M. WUNDERLICH,
MARIE WUNDERLICH, ET AL.

ON PETITION FOR A WRIT OF CERTIORARI TO THE UNITED STATES
COURT OF CLAIMS

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In the Court of Claims

No. 46307

MARTIN WUNDERLICH, ANN M. WUNDERLICH, MARIE WUNDERLICH,
E. MURIELLE WUNDERLICH AND THEODORE WUNDERLICH, A PART-
NERSHIP, TRADING UNDER THE NAME OF MARTIN WUNDERLICH
COMPANY,

v.

THE UNITED STATES

I

PETITION—Filed February 14, 1945

To the Honorable the Court of Claims:

The plaintiffs, Martin Wunderlich, Ann M. Wunderlich, Marie Wunderlich, E. Murielle Wunderlich and Theodore Wunderlich, respectfully represent:

1. That they are engaged in the construction business as a partnership, Martin Wunderlich Company, and each partner is a citizen of the United States and a resident of the State of Minnesota.

2. On the 14th day of March, 1938, they entered into a contract with the United States, represented by S. O. Harper, Acting Chief Engineer of the Bureau of Reclamation, as contracting officer, for the construction, on a unit price basis, of what is known as the Vallecito Dam on the Pine River, Colorado. A copy of said contract, together with such parts of the attendant specifications as are pertinent, is annexed hereto as Exhibit "A". The full contract with complete specifications and contract drawings will later be produced in evidence and likewise marked Exhibit "A".

3. Under Paragraph 22 of the specifications the work was to be commenced within 30 calendar days after date of receipt of notice to proceed; and was to be completed within 1350 calendar days from date of such notice. The work was begun as agreed and was completed within the time stipulated. On completion of the work the contractors were required to and did give a release of all claims growing out of the contract, except those therein specially reserved, among which are the following:

(NOTE: The claims as numbered in the final release will be similarly numbered herein. Those claims that have been settled or abandoned will be omitted from this petition, but the original numbering will be retained.)

1. Improper Borrow Pit Location

The contract drawings gave the locations for two (2) earth borrow pits and one (1) cobblestone borrow pit. What was known as Borrow Pit #1 was reasonably adjacent to the site of the dam to be built, and was used to exhaustion in obtaining the necessary earth for making the earth filled portions of the dam. There-

3 after the contractors were required to use borrow materials from areas on the same side of the river but much nearer the river and beyond a swampy section of terrain which required the building of a road through and over the swamp and required the excavation of earth in areas where little or no dry materials could be obtained, but where the borrow materials were constantly very wet. The handling of materials of this moisture content involved extraordinary difficulties, extensive and constant repair of excavating and hauling equipment because of equipment becoming mired, and a continuous rebuilding of the road over the swamp, and to the site of the dam. The contractors protested being required to locate a borrow pit in this kind of area or to handle the kind of materials described. When placed on the dam such materials could not be compacted or rolled until they had been processed and dried out, and this tended to delay the work of making the required fill of the dam, with a consequent inefficient use of necessary equipment. The borrow pits as located were in the vicinity of Stations 146+50, 141+50 and 140+50, not shown on the plans as borrow

43+00 43+50 33+50
areas.

The contractors allege that the contracting officer, through his representative, in addition to locating pits in the particular areas described, caused and required the contractors to move their equipment from one position to another therein, and then to another, and then return to the original position and repeat the operation, also that he required such excavation to extend to a depth where seepage from the adjacent river insured that the materials would be constantly wet as herein described. The particular class of

4 materials encountered at the stations indicated were of a kind required for use in portions of the fill, but there were other pits located elsewhere where similar materials but without the excessive moisture could have been obtained without the extraordinary difficulties encountered in obtaining the materials from these particular locations.

The contract price for earth excavation from borrow pits, which was Contract Item #14, was 23 cents per cubic yard, such price to cover both excavation and hauling. The estimated quantity of earth fill was 3,100,000 cubic yards. The quantity of wet materials

was 97,567 cubic yards, plus 2433 cubic yards used in fill across the swamp. The contract price of 23 cents on the 97,567 cubic yards was a wholly inadequate price for the excavation and handling of wet materials as encountered; and was far less than the actual cost of handling such materials. In addition, no payment at all was made for the 2433 cubic yards needed and used to construct a necessary road across the swamp.

The contractors made claim for this particular excavation at the rate of 75 cents per cubic yard, which represented a reasonable and necessary cost thereof plus a reasonable profit for the work. The claim was disallowed by the contracting officer and on appeal to the Head of the Department such disallowance was affirmed. Claim as now made on this account is for \$52,559.75, which was the amount reserved in the final release. It represents the amount reasonably due the contractors on account of the extraordinary work performed under the radically changed conditions from those contemplated by the contract.

5 2. Rehandling Rejected Materials Stock-piled on the Left Abutment

At the time excavation for the cut-off trench was proceeding, the materials encountered were mostly suitable for use as fill in the dam. Some of them were not so suitable because of excessive moisture. Those that were too wet to be suitable were stockpiled by direction of the contracting officer. The portion of the materials from the cut-off trench on the left abutment that were suitable were placed as directed in the dam and all cobbles in excess of 5" in diameter were removed from the fill by the use of rake dozers mounted on tractors. This process as to these materials met the approval of the contracting officer.

Over-sized cobbles could have been removed from the wet materials here involved in exactly the same fashion as such cobbles were removed from those that were placed directly on the fill at the time they were excavated. The requirement of the contracting officer that the wet materials be stockpiled so as to permit them to partially dry out was unreasonable and unnecessary and subjected the contractors to the expense of rehandling all such materials. The contractors protested the requirement and insisted that the materials were unsuitable for fill as and when excavated and, under the specifications, should be wasted. However, the contracting officer declined to permit this procedure, and required the stockpiling and subsequent rehandling as aforesaid.

The actual cost of this rehandling and screening operation, wholly unnecessary, plus 10 per cent was \$36,610.79, which is the amount reserved in the final release as aforesaid, and is the amount now claimed.

6. 3. Stock-piled Materials from the Outlet Works

This claim also involves material which was too wet to be suitable at the time it was excavated. As excavation from the outlet works was proceeding, the contracting officer required that some of the excavated materials be placed as a blanket upstream from the dam, because they were too wet to be suitable for direct placement in the dam. Under Extra Work Order #6, dated December 6, 1940, payment was made for reloading a portion of these materials excavated from the outlet channel and hauling and placing in the depression between the dam and the upstream blanket at the rate of 35 cents per cubic yard. The remaining materials for which only claim is now made, though rehandled under the same circumstances, but placed in the fill of the dam, were not paid for on any basis other than as for original excavation. The work of placing such materials in the so-called stock pile involved exactly similar operations and expense as placing the same materials directly into the embankment. The rehandling of this blanket material and placing it in the dam involved exactly the same operations as the rehandling and placing in the depression.

The actual cost of rehandling the materials that were hauled from the blanket to the dam was \$3,244.14, including 10 per cent for overhead and profit. Claim is made for this amount.

4. Deepening and Widening Cut-Off Trench

When the work of digging the required cut-off trench on the left abutment was in progress, the contracting officer staked out the dimensions and the contractors proceeded to dig the trench on the slopes and to the dimensions as so staked out.

7 The contracting officer was apparently not satisfied with the conditions encountered at the bottom of the trench as thus completed, and required the contractors to dig the same deeper than originally staked out, and with practically vertical sides. Digging a trench with vertical sides, as was here required, and to an excessive depth in shallow experimental lifts is a very much more difficult task than digging the trench as originally staked. Also this additional excavation was performed in the bottom of the trench, where it was muddy and there was little room to operate the equipment.

The contractors protested that the contract price of 35 cents per cubic yard (Contract Item #11) for ordinary trench excavation did not apply to this additional work as the deeper digging was an extra after the trench was staked out and was not comparable to the trench excavation as shown on the plans, and on which the contractors' bid was based. The contractors claimed payment on the basis of cost-plus-10-percent as for extra work.

The contracting officer paid only at the regular contract rate of 35 cents per cubic yard and denied the claim for additional allowance. The contractors duly appealed to the Head of the Department, who affirmed the disallowance made by the contracting officer.

The contractors say that the amount reasonably and necessarily due them on this account is \$10,082.83, for which sum claim is now made.

5. Widening the Sides of Spillway

After excavation for the spillway had been completed to the dimensions indicated by the contract drawings and specifications as staked out by the contracting officer, the contracting officer decided that such excavation should be widened so as to permit the placement of certain drains. By Change Order #5 the contracting officer recognized in part the validity of the contractors' claim for additional allowance and by this Order allowed \$2,450, which apparently was computed at the contract rate for the yardage involved, but payment has not been made. Claim is now made only for the amount he approved.

6. Tile Drains, Cut-Off Trench

When work was near completion in the cut-off trench the contractors were required to and did install between Stations 5+50 and 7+75, at the left abutment, certain tile drains not shown on the plans or otherwise required from which seepage into the excavation was carried into a sump from which it could be pumped out of the work and into the river. The placing of the tile required special facilities in tamping the fill around same and then in grouting the tile. These drains were similar to other drains provided for in the plans and specifications and for which payment was allowed.

The contracting officer denied payment therefor on the ground that under Paragraph 5 of the specifications it was the obligation of the contractors to keep the foundations unwatered and suitably prepared for later fill. The work was done under the orders and directions of the contracting officer or his representative according to plans drawn by him and under his constant inspection and approval. It was not paid for. The contractors had made other arrangements for dewatering this portion of the work and these arrangements were adequate. The actual necessary cost of doing this extra work, with 10 per cent for profit and overhead, amounted to \$2,529.59. The refusal of the contracting officer to pay this amount was appealed to the Head of the Department who affirmed the disallowance. The claim was reserved in the final release and claim is now made for the amount stated.

The amounts included for materials in the item here claimed, as

well as under Claims 10, 7 and 8, are estimated. The Government supplied the necessary materials for all these items but thereafter proceeded to deduct the alleged cost thereof from moneys otherwise due the contractors without itemizing the same or giving any statement as to how much materials were required for each item of work. The aggregate of materials under Items 6 and 10 and 7 and 8 will be correct, representing the actual cost as charged by the Government. As applied to the individual items there may be slight errors one way or the other.

7. Drains, Outlet Channel

When the work of excavating the outlet channel was in progress the contractors were required to and did install a 4" tile drainage in the foundations thereof. The work was done under the orders and directions of the contracting officer. Payment was refused on the same ground as noted under the preceding item. The tile as placed and installed was identical with other drains provided for in the plans and specifications and for which payment was allowed, and became a part of the permanent work. The contractors were paid nothing therefor. The actual cost of this work, including materials originally furnished without charge by the United States Government, but the cost of which, on claim being made, was deducted from the final estimate, plus 10 percent for profit and overhead amounted to \$362.03, for which sum claim is now made. The contracting officer refused payment and the Head of Department denied the claim on appeal.

8. Drains, Spillway Channel

In a part of the spillway when work was in progress, the contractors were required to place certain drains in the foundation and place therein a 4" tile embedded in gravel. This work was not shown on the plans or otherwise required. The contracting officer refused payment on the ground that the work was necessary for a proper foundation. The contractors claimed reimbursement of the actual cost which, with 10 percent for profit, amounted to \$2,319. The contracting officer denied the claim and the Head of the Department affirmed the denial. Claim is now made for this amount.

9. Change in Grade of Outlet Works Channel

This item is now abandoned as being too small to justify litigation.

10. Drains, Cut-Off Trench

This item of claim is of the same character as that described under Claim No. 6. When the work of preparing the cut-off trench

between Stations 5+00 and 8+45, of the left abutment, was in progress and near completion, the contractors were required to make a necessary trench and install 4" and 6" drainage tile embedded in gravel in the foundation thereof. This work was not shown on the drawings or otherwise as required. The contracting officer required it to be done and the same was performed
11 under his direction and inspection and to his approval, and with his promise that payment would be made therefor. He later refused payment therefor on the ground that the work was necessary for a proper preparation of the foundations. It involved much extra work in the way of tamping and rolling fill materials around the tile and around grout pipes left protruding therefrom so that the same could be filled with grout after the foundations were fully prepared. The total actual cost of the work, including 10 percent for profit and overhead, was \$2,750.28, no part of which has been paid the contractors.

The contracting officer refused payment as in the case of other similar items of claim on the ground that the work was necessary to insure dry foundations. The Head of Department affirmed the disallowance. Plaintiffs say that the work was extra work, not shown on the plans or otherwise required, and that the actual reasonable cost thereof was as stated, and claim is made in this amount.

11. "French" Drain Stilling Basin and Spillway

As work in the stilling basin and along the right side of the spillway was proceeding at about Stations 26+75 to 27+25, the contracting officer directed the contractors to install in the bottom thereof what is known as a "French" drain, the same being the placing of gravel or crushed stone in a fashion that will allow the water to percolate through it. The order was given in an attempt to correct a situation resulting from a small amount of seepage near the vertical curve of the spillway. The contractors had already taken care of this situation by draining into a sump from which the water was pumped away. The contractors say that there
12 was no occasion to construct this drain, but that the work was ordered and was performed, under protest, under such order to the satisfaction of the contracting officer or his representative, and that they have not been allowed nor paid anything on account thereof.

The reasonable cost of the same amounts to \$265.24, for which claim is now made.

Claim No. 12

This claim abandoned.

13. Excavation and Separation of Materials in Spillway Above Station 15+00

The contracting officer approved and allowed the amount of this claim in the sum of \$4,125 and covered same by Change Order #5. The work involved the handling of 8,250 cubic yards, which at 50 cents per cubic yard, as agreed upon by the parties, amounted to the sum stated. The contractors did not accept the Change Order in question because it involved other items relating to claims asserted by a subcontractor, so that the Change Order as a whole could not be accepted without prejudice to the rights of such subcontractor as to such other items. The contracting officer and the contractors agreed that the amount fairly and justly due on account of excavation and separation of materials in the spillway above Station 15+00 which has not been paid for was and is \$4,125. The amount claimed was reserved in the final release and the same amount, \$4,125, is now claimed.

13

14. Extra Sloping of Sides of Spillway

After the spillway channel had been excavated to the dimensions and on the slopes indicated by stakes placed by the contracting officer, the stakes were changed and the contractors were required to come back and excavate to the slopes as so changed. A total of 4776 cubic yards additional excavation was thus moved from outside of the slopes stake lines as first set and outside of the slopes as originally excavated. The work was done by order of and under the direction of the contracting officer, who denied payment for the extra work on the ground that the contractors themselves had inadvertently over-excavated between certain stations. The contractors deny this and say that the work was done strictly as staked out and that the work as finally required involved the matter of what in excavating parlance is known as "feathering out", that is, the work of changing from one slope to another without any break in the lines. Written orders to do the work as changed were refused by the contracting officer. The contractors did the work under protest.

The contractors were paid at the regular excavation rate for 4776 cubic yards involved, amounting to \$1,671.60. They say that the work as performed was rendered far more difficult and expensive than the regular slope excavation contemplated by the contract and that they were entitled to be paid for the difference between what was allowed and what should properly have been allowed,

amounting to \$1,329.92, for which claim is now made. The contracting officer decided that if anything was due it was only \$548.72. The contractors say that they were entitled to the full amount claimed, and claim is made accordingly.

14 Claims Nos. 15 and 16

These items of claim are not now asserted.

17. Cobblestone Excavation and Fill

The contract drawings, Sheet 191-D-45, give the location of two (2) so-called "earth embankment borrow pit" areas, and of one (1) "cobble borrow pit" area. The specified earth embankment borrow area, known as Borrow Pit No. 2, was located to the left of the river and upstream from the dam. The specified cobble borrow pit area was likewise to the left of the river but immediately below and adjacent to the site of the dam.

The so-called "earth embankment borrow pit" area No. 2, contained a very excellent grade of earth materials suitable for fill on the dam, but only to a limited depth, below which was found cobblestone materials containing a relatively small amount of earth. The estimated quantities for cobblestone fills were 80,000 cubic yards (Contract Item #20) and 275,000 cubic yards (Contract Item #21). The first item was to be placed at down-stream toe of the embankment and the second on slopes of the embankment. In addition to the excavation price the contractors were to be paid for placement in fill for the first at 25 cents per cubic yard and for the second at 15 cents per cubic yard, with allowable over-haul allowance if brought from a greater distance than 2,500 feet (Paragraph 52 of the specifications) from the point placed.

After excavating the earth borrow material from Borrow Pit No. 2, the contractors were required to and did continue excavating from the same locations but at a lower elevation, the remaining materials, consisting very largely of cobbles of more than 15 2½ inches in diameter, which under paragraph 57 of the specifications were cobbles of the required size for cobble fill in the dam. The locations from which these materials were obtained were in excess of 2,500 feet from the point of placement, and under Paragraph 52 of the specifications, the contractors were entitled not only to the contract price for cobble borrow excavation but to the contract price for overhaul of cobbles brought to the fill from a distance in excess of 2,500 feet from point of placement. However, the contracting officer, because Pit No. 2 was labelled "an earth pit" classified and paid for the cobble borrow material excavated therefrom as "earth excavation" and paid only the earth excavation rate for all such materials, with no allowance for overhaul because

of the excessive distance hauled. The contractors, beside the excavation so required, were required to and did go to the expense of separating the cobbles from the earth contained therein. No materials for cobble fill in the dam were obtained from the specified regular cobble borrow pit, but all cobble materials were obtained from Pit No. 2, labelled on the drawings as an "earth borrow pit."

The contractors say that they excavated a total of 79,847 cubic yards of cobble borrow material in 1939, and 846,891 cubic yards in 1940, from Pit No. 2; all of which was used in the dam construction, and for which they were paid only at the rate designated for earth borrow excavation. They duly protested the requirement that they excavate cobble borrow material from the so-called "earth pit", and also the ruling that they be paid only for earth excavation for so doing. The contracting officer recognized the contractors' protest that the work was not "earth borrow" excavation and issued

Change Order No. 3 which provided that an adjustment would be made because of the changed condition. The contractors have made demand for payment for the 79,847 cubic yards excavated in 1939, at the cobble borrow price of 35 cents per cubic yard, and for the 1940 cobble borrow excavation at cost-plus-10-percent. Though the contracting officer recognized that the material in question was not "earth borrow" he made payment in the so-called final estimate, only as for "earth borrow" material and has recommended an additional allowance of \$44,208.85, as representing an equitable adjustment on account of the material in question being cobble borrow material and not being earth borrow material as shown on the drawings.

The contractors declined to accept the allowance so recommended, and say that the actual reasonable amount due them in addition to what has already been paid on account of the excessive requirement as herein described was \$181,721.10, no part of which has been paid, and they make claim for this amount. The amount stated is at the contract rate for cobble borrow material obtained in 1939, and at cost-plus-10-percent for cobble borrow material excavated in 1940 from Borrow Pit No. 2, as extended, both less the payment already made as for "earth borrow" material. The amount now claimed, \$181,721.10, was reserved in the final release, and is in addition to partial payments already paid.

18. Excavation Adjacent to Trash Rack

The findings of fact by the contracting officer allow this claim in the amount of \$466.40. The claim as thus allowed is satisfactory to plaintiff but same has not been paid. Claim is therefore now made for the amount so approved by the contracting officer and Head of Department.

Claim No. 19

No claim reserved in the final release under this item.

20. Cut-Off Trench Excavation

Item 3 of the Contract Schedule contemplated an estimated 200,000 cubic yards of stripping for embankment at 20 cents per cubic yard. Item 11 of the Contract Schedule contemplated an estimated 185,000 cubic yards of excavation for embankment toe drains "and cut-off trench" at 35 cents per cubic yard. The contractors proceeded to strip the area of dam foundations and the places where the cut-off trench was to be dug to the satisfaction of and as directed by the contracting officer or his representative. The quantity of stripping material so moved was measured by the contracting officer and thereafter the contractors excavated the cut-off trench to the dimensions shown on the plans or as staked out by the contracting officer. When this trench was thus completed, it developed that the materials on the side walls thereof were considered objectionable by the contracting officer as they did not provide suitable cut-off, and he thereupon directed the contractors to very much widen the trench as excavated; and for the materials removed in this widening allowed and paid only as *stripping*. The contractors discovering that their current estimate did not include all the trench excavation that had been performed, wrote the contracting officer's representative on the work under date of July 15, 1939, asking that he include the full amount of cut-off trench excavation so far performed in the July estimate. This was not done. Of the total of 400,032 cubic yards of actual trench

excavation performed only 229,981 cubic yards have been paid for as trench excavation at the contract price therefor, namely, 35 cents per cubic *per cubic* yard. The balance of such excavation, namely, 170,051 cubic yards, has erroneously been paid for at the contract price for stripping, 20 cents per cubic yard. On further consideration an additional allowance of \$1,279.95 was approved by the contracting officer and affirmed by the Head of Department on appeal, but this has not been paid to or accepted by plaintiffs.

The contractors say that all of the excavation below the required stripping operations was cut-off trench excavation and not *stripping* and should have been paid for at 35 cents per cubic yard for excavation instead of at 20 cents for stripping as paid, and that the balance properly due and unpaid on such account is \$25,507.65, which includes the amount approved for allowance, \$1,279.95, which though approved has not been paid.

The materials involved were strictly trench excavation and not from above or over such trench, and could properly be classified

only as "cut-off trench excavation." The contractors therefore claim \$25,507.65.

21. Extra Cost of Mixing Borrow Pit Materials

Paragraph 55 (b) of the specifications provides that the earth fill portion of the dam should consist of a mixture of clay, sand and gravel available from borrow pits and from excavations required to be made from other parts of the work, and that "the contractor's operations in the excavation of materials for the earth fill shall be such as will result in an acceptable gradation of the materials when compacted in the fill." The contracting officer was to designate the depth of cut in all parts of the borrow pits necessary for obtaining the necessary gradation of materials, and the cuts were to be made to such designated depth. It is further provided (Paragraph 55(b) of specifications) that "each load of earth-fill material delivered on the embankment shall be the equivalent of a mixture of materials obtained from an approximately uniform strip or cutting from the full height of the face of the excavation."

The contractors proceeded to excavate from the borrow pits strictly as thus provided, the contracting officer specifying the depths to which excavation would be carried. Making a vertical cut in the pits could and did result in an adequate mixture of the different strata of materials found in such pits. However, the contracting officer was not satisfied with the gradation effected by this prescribed operation and required the contractors, after making a cut with their shovel, to drop the load, make another cut, with additional repetition of the operation and then to load the materials as thus cut and dumped. This requirement necessarily greatly slowed operations and resulted in the double handling of most of the materials excavated. The contractors say that the operation required by the contracting officer was wholly unnecessary; that mixing it strictly as provided by the contract gave as good a result as it was possible to obtain; and that doing the work as thus required added very greatly to the expense, not only of excavating from the pits but of loading the excavated materials for transportation to the fill. This requirement resulted in the hauling equipment having to stand idle at times and in the prolonged use of excavating equipment, both of which were expensive and both of which for economical operation should have been kept constantly productive.

The contractors say that the actual increased cost to them by this arbitrary requirement of the contracting officer amounted to \$68,277.11, for which claim is now made. This sum was reserved in the final release. In this case, as in others, the contractors duly

protested the requirements of the contracting officer, but were given no written order to do the work as orally directed.

Claim No. 22

No claim reserved in final release under this number.

23. Moving Back Into Borrow Pit No. 1

After the contractors had completed excavation from Borrow Pit No. 1 to the grades and dimensions specified by the contracting officer, leaving therein only certain materials which the contracting officer then decided were unsuitable for fill and after they had moved their equipment to other locations, the contracting officer required them to move back into Borrow Pit No. 1 and excavate what had previously been classed as unsuitable materials. This excavation in regular course could have been performed at regular contract rates. As required, it cost the contractors approximately \$1,000 in excess of what they were allowed and paid on account of such re-excavation. They protested the requirement that they move back into Borrow Pit No. 1 and excavate these scattered materials, but the contracting officer persisted in the requirement and the work was done as directed and claim was made on the contracting officer for the allowance of the cost of doing this work, less what was paid. He denied the claim but conceded that if anything 21 was due the amount was \$946.20.

No written order was given requiring the contractors to do this work and no written protest was filed. The claim was denied by the contracting officer and on appeal the denial was affirmed by the Head of Department.

Claim is now made for the actual increased cost amounting to \$1,000, which is the sum reserved in the final release.

Claims Nos. 24, 25 and 26

No reservations made in the final release under these numbers.

27. Claim for Rock Excavation

Paragraph 41 of the specifications defines what shall constitute rock excavation and what shall constitute common excavation.

Rock excavation was to consist of: "All solid rock in place which cannot be removed until loosened by blasting, barring, or wedging and all boulders or detached pieces of solid rock more than one cubic yard in volume." The same was to be classed and paid for as rock excavation.

Paragraph 44 of the specifications gave the requirements for stripping for the embankment as follows:

"The entire area to be occupied by the dam * * * shall be stripped or excavated to a sufficient depth to remove all materials not suitable for the foundation, as determined by the contracting officer, and only to the lines and grades established by the contracting officer."

22 The unsuitable materials thus to be removed to include:

"Top soil, all rubbish, vegetable matter of every kind, roots, and all other perishable or objectionable materials which might interfere with the bonding of the embankment with the foundation * * *"

In excavating the cut-off trenches 1,206 cubic yards of large boulders in excess of 1 cubic yard in size were encountered and excavated and moved. These materials were classed by the contracting officer as "common excavation" and paid for at the rate of 35 cents per cubic yard. The contractors say that such excavation should have been classed as "rock excavation" (Item 12, Contract Schedule) and paid for at \$2.00 per cubic yard.

In stripping for the dam foundations and particularly along and over the river bed 4,665 cubic yards of boulders in excess of 1 cubic yard in size were encountered and removed. These likewise were classed by the contracting officer as "stripping" (Item 3, Contract Schedule) and paid for at 20 cents per cubic yard.

The contractors say that this should have been classed as "rock excavation" (Item 12, Contract Schedule) and paid for at \$2.00 per cubic yard.

In addition 4,000 cubic yards of boulders of less than 1 cubic yard in volume which were moved in the stripping operation have not been computed or allowed in estimates on any basis. Payment is due therefor at the stripping price of 20 cents per cubic yard.

The contractors say that they have been underpaid for the work actually done in the respects noted in the amount of \$11,186.90, which amount is now claimed. This claim was reserved in
23 the final release.

Claim No. 28

This item of claim is not now asserted.

Claims Nos. 29 and 30

No reservations made in final release for these items.

31. Excavating and Backfilling Downstream from Station 15+00, Spillway

In the progress of the work the contracting officer duly staked out the slopes at and below Station 15+00 in the spillway, and the contractors endeavored to excavate to the slopes as so staked out. Owing to the character of the materials in that location they would not stand up at the slopes indicated, and the contractors were required to and did remove materials to the slope on which they would stand. Also below the top of the spillway wall it was necessary for the contractors to place additional backfill to bring it to the slope excavated. The attention of the contracting officer was called to the situation, but he failed and neglected to change the slopes as originally staked out, and paid for excavation only to such slopes.

The contractors say that the slopes as staked out were not to practical dimensions; that the contracting officer was arbitrary and unreasonable in failing and neglecting to specify a practical slope. The amount of materials excavated and backfilled in excess of those staked out and paid for at contract rates amounts to \$3,176.54, and claim is made for this sum, which is the one reserved in the final release.

24 32. Extra Cost Ditches for Drains

In due course of operations the contractors were ready and had equipment available for excavating transverse joint ditches in spillway. By letter of April 17, 1940, the contractors were directed to defer the digging of these ditches and when they were later directed to come back and dig them other work, namely, the building of concrete walls in the vicinity, much delayed and interfered with the orderly performance of the trench work. The contractors duly protested the requirement as an interference with the orderly and best method of doing the work. They kept an account of the actual cost of doing it as changed and made claim therefor, which was denied by the contracting officer. On appeal such denial was affirmed by the Head of Department.

The actual cost, including 10 percent, allowable profit, is \$2,279.92, which amount is now claimed. This amount was reserved in the final release.

33. Change in Plans Calling for Extra Widening in Spillway

After excavating in the spillway had been completed between Stations 6+90 and 12+12, except for minor dressing up, the contractors were required by the contracting officer to widen the excavation as thus previously completed, and they were given changes in plans showing such widening.

The actual cost of doing this work over what they were allowed at contract rates for the excavation involved was \$1,360.72, which amount is now claimed. This claim was reserved in the final release.

25 34. Replacing Backfill Cut-Off Wall, Right Abutment

After the contractors had placed and thoroughly tamped backfill along the cut-off wall and in the cut-off trench at the right abutment, they were required to remove this for the convenience of the Government; and later on had to replace same and again compact the materials as required under the specifications. They were not allowed any extra compensation for the removal and replacement of this material, which was solely for the benefit of the Government and serving no beneficial purpose so far as the contractors' progress of the work was concerned.

The actual cost of the work here involved was \$997.92, which amount is now claimed. This claim was reserved under the final release.

35. Extra Rolling of Parts of Embankment Fill

Paragraph 55(f) of the specifications gave the requirements as to rolling of materials in the fill. It was therein required that the tamping roller should be moved over the fill 12 times and that "if the moisture content is greater or less than the optimum for compaction, the rolling shall not proceed except with the specific approval of the contracting officer, and, in that event, additional rolling shall be done, as directed by the contracting officer, to obtain the required compaction and no adjustment in price shall be made therefor."

The same paragraph further provided:

26 "If, with the optimum moisture content, it is found desirable to roll each six-inch layer more or less than 12 times to obtain the desired compaction, the number of rollings shall be changed accordingly, as directed by the contracting officer, and adjustment will be made in the unit price bid for compacted embankment in the amount of 25/100 cents per cubic yard for each additional or lesser number of rollings required."

The contractors proceeded to roll fill as directed in six-inch layers, and in no case were they permitted to begin rolling such materials until the contracting officer or his representative decided that the moisture content was at the optimum for such rolling. Notwithstanding, materials were thus rolled only and as the contracting officer required. Whenever compaction satisfactory to his require-

ments was not obtained by the 12 required rollings he required numerous additional rollings to be made and no allowances have been made for such extra rollings. The contracting officer was given a record of the dates, locations, number of rollings and all other pertinent data, but failed to make any allowance for such rollings.

The contractors say that the extra rollings were performed only under the direction of the contracting officer and only after he had determined that the moisture content was at the optimum, and that under the provisions of the contract (quoted above), they were entitled to be paid at $\frac{1}{4}$ cent per cubic yard for all materials thus rolled. They say that there is a balance of \$1,500.83 due them and unpaid, for which claim is now made. The claim was reserved in the final release.

36. Rock Excavation Stations 2+25-5+30.

In this area the contractors encountered and were required to excavate 6,940 cubic yards of materials, which was solid rock as defined in Paragraph 41 of the specifications, and hence to be classed as rock excavation. During the process of doing the work this material was correctly estimated and paid for as "rock excavation". At a later date, estimates were made without the assent of plaintiffs, changing this from "rock" to "earth" excavation. The contractors made claim for the work on its true basis, i.e., for "rock excavation", but such claim was disallowed by the contracting officer, and on appeal the disallowance was affirmed by the Head of Department.

Claim is now made for the unpaid balance due amounting to \$2,556.70, which is the same claim reserved in the final release.

37. Rock Excavation, Spillway

This item grew out of circumstances very similar to those enumerated under Claim No. 31, except that the work involved was between Station 1+75 and 15+00 in the spillway. The materials encountered and removed were rock as defined by Paragraph 41 of the specifications. The rock in question was for the most part large boulders or solid blocks of stone which the contracting officer required to be removed because it contained objectionable seams, and the removal of which carried excavation beyond the neat lines. The contracting officer made payment only to the theoretical lines for both excavation and backfill, and not to the actual lines of the work as required.

Claim is now made for payment of all excavation and backfill, which amounts to an additional \$1,427.09, which is the amount reserved in the final release.

Claim No. 38

This item of claim reserved in the release will not be pressed.

28

Claim No. 39

Claim abandoned.

40. Extra for Wet Clay, Borrow Pit No. 1

Between May 24 and August 1, 1940 the contractors were required to and did remove a large yardage of very wet clay materials from Borrow Pit No. 1, for which they were allowed and paid, under Item 14, Contract Schedule, at 23 cents per cubic yard. The contractors protested against being required to remove these wet clay materials as doing so meant greatly increased expenses in the matter of handling, transportation and placement of such materials, and it was outside the requirements of the specifications. Such clayey materials could not be and were not allowed to be compacted on the fill until they had been dried out. Working with materials of this kind meant greatly increased expenses and delay to the work of the contractors. They protested the requirement and insisted that it was the obligations of the Government to furnish a workable borrow pit at all times, and that these materials did not meet that requirement.

The increased cost incident to handling these wet materials was \$13,200. (220,000 cubic yards at an increased cost of 6 cents per yard), for which claim is now made. This is the amount reserved in the final release.

41. Additional Cost Unwatering Gate Chamber and Concreting Gate Plug

This item of claim was approved by the contracting officer and Change Order No. 4 issued, covering the \$500 then agreed upon as the amount due. The contractors could not accept such

29 Change Order because other matters as to which there were controversies were included therein. The contracting officer found as a fact that the additional work was done, and that the cost thereof was reasonably \$500, and agreed to allow same, but the allowance so agreed upon has not been paid. This amount is now claimed.

42. Claim of Subcontractor

In the final release the sum of \$15,000 was reserved as covering "such claims as Dutton, Kendall & Hunt have asserted or may assert as a result of the performance of their subcontract." The subcontractor has been called upon for details of such claims, but

has not furnished same. This item of claim may therefore be abandoned.

43. Interest

This claim was reserved in the release but is now abandoned as untenable.

No other action has been had on said claim in Congress or by any of the departments; no person other than the plaintiffs is the owner thereof or interested therein; no assignment or transfer of this claim, or of any interest therein, has been made; the plaintiffs are justly entitled to the amount herein claimed from the United States, after allowing all just credits and offsets; the plaintiffs have at all times borne true allegiance to the Government of the United States and have not in any way voluntarily aided, abetted, or given encouragement to rebellion against the said Government. The plaintiffs are citizens of the United States. And the plaintiffs claim \$433,387.45.

KING & KING,
Attorneys for Plaintiffs.

District of Columbia,, ss:

George R. Shields, being duly sworn, deposes and says: I am one of the attorneys for the plaintiff company plaintiffs in this case. I have read the above petition and the matters therein stated are true, to the best of my knowledge, information and belief.

GEORGE R. SHIELDS.
Signature.

Subscribed and sworn to before me this 14th day of February, 1945.

VESLA HARTWELL.
Official Signature.

Notary Public.
Official Title.

MARTIN WUNDERLICH, ANN M. WUNDERLICH, MARIE WUNDERLICH, E. MURIELLE WUNDERLICH AND THEODORE WUNDERLICH, a partnership trading under the name of MARTIN WUNDERLICH COMPANY,

v.

THE UNITED STATES

EXHIBIT "A" TO PETITION

CONTRACT

(Construction)

Contract for construction of Vallecito Dam, Amount \$2,115,870.00.
Place—Pine River project, Colorado.

CONTRACT FOR CONSTRUCTION

This contract, entered into this 14th day of March, 1938, by the United States of America, hereinafter called the Government, represented by the contracting officer executing this contract, and Martin Wunderlich Company, a partnership consisting of Martin Wunderlich, Ann M. Wunderlich, Marie Wunderlich, E. Murielle Wunderlich and Theodore Wunderlich, of the city of Jefferson City, in the State of Missouri, hereinafter called the contractor, witnesseth that the parties hereto do mutually agree as follows:

ARTICLE 1. *Statement of work.*—The contractor shall furnish the materials, and perform the work under the schedule of Specifications No. 705 for the consideration of the prices stated in the schedule, in strict accordance with the specifications, schedules, and drawings, all of which are made a part hereof and designated as follows:

Specifications No. 705, and supplemental notices to bidders
dated November 10 and November 29, 1937.

The work shall be commenced
and shall be completed as provided in paragraph 22 of the specifications.

ARTICLE 2. *Specifications and drawings.*—The contractor shall keep on the work a copy of the drawings and specifications and shall at all times give the contracting officer access thereto. Anything mentioned in the specifications and not shown on the drawings, or

shown on the drawings and not mentioned in the specifications, shall be of like effect as if shown or mentioned in both. In case of difference between drawings and specifications, the specifications shall govern. In any case of discrepancy in the figures, drawings, or specifications, the matter shall be immediately submitted to the contracting officer, without whose decision said discrepancy shall not be adjusted by the contractor, save only at his own risk and expense. The contracting officer shall furnish from time to time such detail drawings and other information as he may consider necessary, unless otherwise provided. Upon completion of the contract the work shall be delivered complete and undamaged.

ARTICLE 3. *Changes.*—The contracting officer may at any time, by a written order, and without notice to the sureties, make changes in the drawings and/or specifications of this contract and within the general scope thereof. If such changes cause an increase or decrease in the amount due under this contract, or in the time required for its performance, an equitable adjustment shall be made and the contract shall be modified in writing accordingly. No change involving an estimated increase or decrease of more than Five Hundred Dollars shall be ordered unless approved in writing by the head of the department or his duly authorized representative.

33 Any claim for adjustment under this article must be asserted within 10 days from the date the change is ordered: *Provided, however,* That the contracting officer, if he determines that the facts justify such action, may receive and consider, and with the approval of the head of the department or his duly authorized representative, adjust any such claim asserted at any time prior to the date of final settlement of the contract. If the parties fail to agree upon the adjustment to be made the dispute shall be determined as provided in article 15 hereof. But nothing provided in this article shall excuse the contractor from proceeding with the prosecution of the work so changed.

ARTICLE 4. *Changed conditions.*—Should the contractor encounter, or the Government discover, during the progress of the work sub-surface and/or latent conditions at the site materially differing from those shown on the drawings or indicated in the specifications, or unknown conditions of an unusual nature differing materially from those ordinarily encountered and generally recognized as inhering in the work of the character provided for in the plans and specifications, the attention of the contracting officer shall be called immediately to such conditions before they are disturbed. The contracting officer shall thereupon promptly investigate the conditions, and if he finds that they do so materially differ the contract shall, with the written approval of the head of the department or his duly authorized representative, be modified to provide for any increase or decrease of cost and/or difference in time resulting from such conditions.

ARTICLE 5. *Extras*.—Except as otherwise herein provided, no charge for any extra work or material will be allowed unless the same has been ordered in writing by the contracting officer and the price stated in such order.

ARTICLE 6. *Inspection*.—(a) All material and workmanship (if not otherwise designated by the specifications) shall be subject to inspection, examination, and test by Government inspectors
34 at any and all times during manufacture and/or construction and at any and all places where such manufacture and/or construction are carried on. The Government shall have the right to reject defective material and workmanship or require its correction. Rejected workmanship shall be satisfactorily corrected and rejected material shall be satisfactorily replaced with proper material without charge therefor, and the contractor shall promptly segregate and remove the same from the premises. If the contractor fails to proceed at once with the replacement of rejected material and/or the correction of defective workmanship the Government may, by contract or otherwise, replace such material and/or correct such workmanship and charge the cost thereof to the contractor, or may terminate the right of the contractor to proceed as provided in article 9 of this contract, the contractor and surety being liable for any damage to the same extent as provided in said article 9 for terminations thereunder.

(b) The contractor shall furnish promptly without additional charge, all reasonable facilities, labor, and materials necessary for the safe and convenient inspection and test that may be required by the inspectors. All inspection and tests by the Government shall be performed in such manner as not to unnecessarily delay the work. Special, full size, and performance tests shall be as described in the specifications. The contractor shall be charged with any additional cost of inspection when material and workmanship is not ready at the time inspection is requested by the contractor.

(c) Should it be considered necessary or advisable by the Government at any time before final acceptance of the entire work to make an examination of work already completed, by removing or tearing out same, the contractor shall on request promptly furnish all necessary facilities, labor, and material. If such work is found to be defective in any material respect, due to fault of the contrac-
35 tor or his subcontractors, he shall defray all the expenses of such examination and of satisfactory reconstruction. If, however, such work is found to meet the requirements of the contract, the actual cost of labor and material necessarily involved in the examination and replacement, plus 15 percent, shall be allowed the contractor and he shall, in addition, if completion of the work has been delayed thereby, be granted a suitable extension of time on account of the additional work involved.

(d) Inspection of material and finished articles to be incorporated

in the work at the site shall be made at the place of production, manufacture, or shipment, whenever the quantity justifies it, unless otherwise stated in the specifications; and such inspection and acceptance, unless otherwise stated in the specifications, shall be final, except as regards latent defects, departures from specific requirements of the contract and the specifications and drawings made a part thereof, damage or loss in transit, fraud, or such gross mistakes as amount to fraud. Subject to the requirements contained in the preceding sentence, the inspection of material and workmanship for final acceptance as a whole or in part shall be made at the site.

ARTICLE 7. *Materials and workmanship.*—Unless otherwise specifically provided for in the specifications, all workmanship, equipment, materials, and articles incorporated in the work covered by this contract are to be of the best grade of their respective kinds for the purpose. Where equipment, materials, or articles are referred to in the specification as "equal to" any particular standard, the contracting officer shall decide the question of equality. The contractor shall furnish to the contracting officer for his approval the name of the manufacturer of machinery, mechanical and other equipment which he contemplates incorporating in the work, together with their performance capacities and other pertinent information. When required by the specifications, or when called
36 for by the contracting officer, the contractor shall furnish the contracting officer for approval full information concerning the materials or articles which he contemplates incorporating in the work. Samples of materials shall be submitted for approval when so directed. Machinery, equipment materials, and articles installed or used without such approval shall be at the risk of subsequent rejection. The contracting officer may require the contractor to dismiss from the work such employee as the contracting officer deems incompetent, careless, insubordinate, or otherwise objectionable.

ARTICLE 8. *Superintendence by contractor.*—The contractor shall give his personal superintendence to the work or have a competent foreman or superintendent, satisfactory to the contracting office, on the work at all times during progress, with authority to act for him.

ARTICLE 9. *Delays—Damages.*—If the contractor refuses or fails to prosecute the work, or any separable part thereof, with such diligence as will insure its completion within the time specified in article 1, or any extension thereof, or fails to complete said work within such time, the Government, may, by written notice to the contractor, terminate his right to proceed with the work or such part of the work as to which there has been delay. In such event the Government may take over the work and prosecute the same to completion, by contract or otherwise, and the contractor and his

sureties shall be liable to the Government for any excess cost occasioned the Government thereby. If the contractor's right to proceed is so terminated, the Government may take possession of and utilize in completing the work such materials, appliances, and plant as may be on the site of the work and necessary therefor. If the Government does not terminate the right of the contractor to proceed, the contractor shall continue the work, in which event the actual damages for the delay will be impossible to determine and in lieu thereof the contractor shall pay to the

Government as fixed, agreed, and liquidated damages for each
37 calendar day of delay until the work is completed or accepted the amount as set forth in the specifications or accom-

panying papers and the contractor and his sureties shall be liable for the amount thereof: *Provided*, That the right of the contractor to proceed shall not be terminated or the contractor charged with liquidated damages because of any delays in the completion of the work due to unforeseeable causes beyond the control and without the fault or negligence of the contractor, including, but not restricted to, acts of God, or of the public enemy, acts of the Government, acts of another contractor in the performance of a contract with Government, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and unusually severe weather or delays of subcontractors due to such causes, if the contractor shall within 10 days from the beginning of any such delay (unless the contracting officer, with the approval of the head of the department or his duly authorized representative, shall grant a further period of time prior to the date of final settlement of the contract) notify the contracting officer in writing of the causes of delay, who shall ascertain the facts and the extent of the delay and extend the time for completing the work when in his judgment the findings of fact justify such an extension, and his findings of fact thereon shall be final and conclusive on the parties hereto, subject only to appeal, within 30 days, by the contractor to the head of the department concerned, or his duly authorized representative whose decision on such appeal as to the facts of delay and the extension of time for completing the work shall be final and conclusive on the parties hereto.

ARTICLE 10. *Permits and care of work*.—The contractor shall, without additional expense to the Government, obtain all required licenses and permits and be responsible for all damages to persons or property that occur as a result of his fault or negligence in connection with the prosecution of the work, and shall be responsible for the proper care and protection of all materials delivered and work performed until completion and final acceptance.

38 ARTICLE 11. *Eight-hour law—Convict labor*.—(a) No laborer or mechanic doing any part of the work contemplated by this contract, in the employ of the contractor or any subcontractor contracting for any part of said work contemplated, shall be

required or permitted to work more than eight hours in any one calendar day upon such work at the site thereof. For each violation of the requirements of this article a penalty of five dollars shall be imposed upon the contractor for each laborer or mechanic for every calendar day in which such employee is required or permitted to labor more than eight hours upon said work, and all penalties thus imposed shall be withheld for the use and benefit of the Government: *Provided*, That this stipulation shall be subject in all respects to the exceptions and provisions of U. S. Code, title 40, sections 321, 324, 325, and 326, relating to hours of labor.

(b) The contractor shall not employ any person undergoing sentence of imprisonment at hard labor.

ARTICLE 12. *Covenant against contingent fees.*—The contractor warrants that he has not employed any person to solicit or secure this contract upon any agreement for a commission, percentage, brokerage, or contingent fee. Breach of this warranty shall give the Government the right to terminate the contract, or, in its discretion, to deduct from the contract price or consideration the amount of such commission, percentage, brokerage, or contingent fees. This warranty shall not apply to commissions payable by contractors upon contracts or sales secured or made through bona fide established commercial or selling agencies maintained by the contractor for the purpose of securing business.

ARTICLE 13. *Other contracts.*—The Government may award other contracts for additional work, and the contractor shall fully cooperate with such other contractors and carefully fit his own work to that provided under other contracts as may be directed by the contracting officer. The contractor shall not commit or permit any act which will interfere with the performance of work by any other contractor.

39 ARTICLE 14. *Officials not to benefit.*—No Member of or Delegate to Congress, or Resident Commissioner, shall be admitted to any share or part of this contract or to any benefit that may arise therefrom, but this provision shall not be construed to extend to this contract if made with a corporation for its general benefit.

ARTICLE 15. *Disputes.*—Except as otherwise specifically provided in this contract, all disputes concerning questions of fact arising under this contract shall be decided by the contracting officer subject to written appeal by the contractor within 30 days to the head of the department concerned or his duly authorized representative, whose decision shall be final and conclusive upon the parties thereto. In the meantime the contractor shall diligently proceed with the work as directed.

ARTICLE 16. *Payments to contractors.*—(a) Unless otherwise provided in the specifications, partial payments will be made as the work progresses at the end of each calendar month, or as soon

thereafter as practicable, on estimates made and approved by the contracting officer. In preparing estimates the material delivered on the site and preparatory work done may be taken into consideration.

(b) In making such partial payments there shall be retained 10 percent on the estimated amount until final completion and acceptance of all work covered by the contract: *Provided, however,* That the contracting officer, at any time after 50 percent of the work has been completed, if he finds that satisfactory progress is being made, may make any of the remaining partial payments in full: *And provided further,* That on completion and acceptance of each separate building, vessel, public work, or other division of the contract, on which the price is stated separately in the contract, payment may be made in full, including retained percentages thereon, less authorized deductions.

(c) All material and work covered by partial payments made shall thereupon become the sole property of the Government, but
40 this provision shall not be construed as relieving the contractor from the sole responsibility for the care and protection of materials and work upon which payments have been made or the restoration of any damaged work, or as a waiver of the right of the Government to require the fulfillment of all of the terms of the contract.

(d) Upon completion and acceptance of all work required hereunder, the amount due the contractor under this contract will be paid upon the presentation of a properly executed and duly certified voucher therefor, after the contractor shall have furnished the Government with a release, if required, of all claims against the Government arising under and by virtue of this contract, other than such claims, if any, as may be specifically accepted by the contractor from the operation of the release in stated amounts to be set forth therein.

ARTICLE 17. *Rate of wages* (in accordance with Public Act No. 403, 74th Cong., approved Aug. 30, 1935, this article shall apply if the contract is in excess of \$2,000 in amount and is for the construction, alteration, and/or repair, including painting and decorating, of a public building or public work within the geographical limits of the States of the Union or the District of Columbia).—

(a) The contractor or his subcontractor shall pay all mechanics and laborers employed directly upon the site of the work, unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account, the full amounts accrued at time of payment, computed at wage rates not less than those stated in the specifications, regardless of any contractual relationship which may be alleged to exist between the contractor or subcontractor and such laborers and mechanics; and the scale of wages to be paid shall be posted by the contractor in a prominent

and easily accessible place at the site of the work. The contracting officer shall have the right to withhold from the contractor so much of accrued payments as may be considered necessary by the
41 contracting officer to pay to laborers and mechanics employed by the contractor or any subcontractor on the work the difference between the rates of wages required by the contract to be paid laborers and mechanics on the work and the rates of wages received by such laborers and mechanics and not refunded to the contractor, subcontractors, or their agents.

(b) In the event it is found by the contracting officer that any laborer or mechanic employed by the contractor or any subcontractor directly on the site of the work covered by the contract has been or is being paid a rate of wages less than the rate of wages required by the contract to be paid as aforesaid, the Government may, by written notice to the contractor, terminate his right to proceed with the work or such part of the work as to which there has been a failure to pay said required wages and prosecute the work to completion by contract or otherwise, and the contractor and his sureties shall be liable to the Government for any excess costs occasioned the Government thereby.

ARTICLE 18. *Domestic preference.*—In the performance of the work covered by this contract the contractor, subcontractors, material men or suppliers, shall use only such unmanufactured articles, materials, and supplies as have been mined or produced in the United States, and only such manufactured articles, materials, and supplies as have been manufactured in the United States substantially all from articles, materials, or supplies mined, produced, or manufactured, as the case may be, in the United States. The foregoing provision shall not apply to such articles, materials, or supplies of the class or kind to be used or such articles, materials, or supplies from which they are manufactured, as are not mined, produced, or manufactured, as the case may be, in the United States in sufficient and reasonably available commercial quantities and of a satisfactory quality, or to such articles, materials, or supplies as
42 may be accepted by the head of the department under the proviso of title III, section 3, of the act of Congress approved March 3, 1933 (U. S. Code, title 41, sec. 10b).

ARTICLE 19. *Nonrebate.*—(a) The contractor shall furnish to the Government representative in charge at the site of the work covered by this contract, or if no Government representative is in charge at the site, shall mail to the Federal agency having control of the project, within 3 days after the payment of each and every weekly pay roll, an affidavit in the form prescribed by regulations issued jointly by the Secretary of the Treasury and the Secretary of the Interior under date of January 8, 1935, to be effective on and after January 15, 1935, or any modification thereof pursuant to the act of June 13, 1934 (48 Stat. 948), sworn to by the officer or employee

of the contractor supervising such payment, to the effect that each and every person employed on the work has been paid in full the weekly wages shown on the pay roll covered by the affidavit; that no rebates or deductions from any wages due such employee or employees have been made either directly or indirectly; and that to the best of the knowledge and belief of the affiant no agreement or understanding exists with any person employed on the project pursuant to which any person, directly or indirectly, by force, intimidation, threat, or otherwise, induces or receives any deductions or rebates in any manner whatever from any sum paid or to be paid any person for labor performed in carrying out this contract. At the time upon which the first affidavit with respect to wages paid employees is filed the contractor shall also furnish an affidavit setting forth the name of the officer or employee who supervises the payment of employees and stating that such officer or employee is in a position to have full knowledge of the facts set forth in the affidavit respecting the payment of wages of employees. In the event that the contractor is a corporation the second affidavit herein described shall be executed by its president or a vice president; in case the contractor is a partnership such affidavit shall be

43 executed by one of the partners. A similar affidavit shall be filed immediately in the event that a change is made in the officer or employee who supervises the payment of employees.

(b) The contractor shall cause appropriate provisions to be inserted in all subcontracts relating to this work to insure fulfillment of the requirements of this article.

ARTICLE 20. *Additional security.*—Should any surety upon the bond for the performance of this contract become unacceptable to the Government, or if any such surety shall fail to furnish reports as to his financial condition from time to time as requested by the Government, the contractor must promptly furnish such additional security as may be required from time to time to protect the interests of the Government and of persons supplying labor or materials in the prosecution of the work contemplated by the contract.

ARTICLE 21. *Definitions.*—(a) The term "head of the department" as used herein shall mean the head or any assistant head of the executive department or independent establishment involved, and the term "his duly authorized representative" shall mean any person authorized to act for him * * *

● The term "contracting officer" as used herein shall include his duly appointed successor or his authorized representative.

ARTICLE 22. *Alterations.*—The following changes were made in this contract before it was signed by the parties hereto:

The words "or his duly authorized representative" have been added to Article 9 hereof.

The words "other than the contracting officer" have been deleted from paragraph (a) of Article 21 hereof.

44 IN WITNESS WHEREOF, the parties hereto have executed this contract as of the day and year first above written:

THE UNITED STATES OF AMERICA,
By S. O. HARPER,
Acting Chief Engineer,
Bureau of Reclamation.

MARTIN WUNDERLICH COMPANY,
Contractor.

By MARTIN WUNDERLICH,
Member of firm.
Jefferson City, Missouri.

Two witnesses:

GEO. P. LEONARD,
IRENE BRUNS.

[fol. 45]

VALLECITO DAM

Pine River Project, Colorado

Bids will be considered on the following schedule, but no bids will be considered for only a part of the schedule.

SCHEDULE

Item No.	Work or material	Quantity and price	Amount
1	Diversion and care of river during construction and unwatering foundations	For the lump sum of fifteen thousand dollars.....	\$15,000.00
2	Excavation, stripping borrow pits	125,000 cu. yds., at twenty-three cents (\$.23) per cu. yd.....	28,750.00
3	Excavation, stripping for embankment	200,000 cu. yds., at twenty cents (\$.20) per cu. yd.....	40,000.00
4	Excavation, common, and separation of excavation for diversion channel	70,000 cu. yds., at thirty-five cents (\$.35) per cu. yd.....	24,500.00
5	Excavation, rock, for diversion channel	500 cu. yds., at two dollars (\$2.00) per cu. yd.....	1,000.00
6	Excavation, common, for spillway upstream from station 15+00	151,000 cu. yds., at twenty-three cents (\$.23) per cu. yd.....	34,730.00
7	Excavation, common, and separation of excavation for spillway downstream from station 15+00	444,000 cu. yds., at thirty-five cents (\$.35) per cu. yd.....	155,400.00
8	Excavation, rock, for spillway	75,000 cu. yds., at sixty cents (\$.60) per cu. yd.....	45,000.00
9	Excavation, common, and separation of excavation for outlet works	140,000 cu. yds., at thirty-five cents (\$.35) per cu. yd.....	49,000.00
10	Excavation, rock, for outlet works	3,600 cu. yds., at two dollars (\$2.00) per cu. yd.....	7,200.00
11	Excavation, common, and separation of excavation for embankment toe drains and cut-off trench	185,000 cu. yds., at thirty-five cents (\$.35) per cu. yd.....	64,750.00
12	Excavation, rock, for embankment toe drains and cut-off trench	500 cu. yds., at two dollars (\$2.00) per cu. yd.....	1,000.00

[fol.46]

Item No.	Work or material	Quantity and price	Amount
13	Excavation, rock, for concrete cut-off wall footings	1,000 cu. yds., at five dollars (\$5.00) per cu. yd.	\$5,000.00
14	Excavation, common, in borrow pits for earth fill in embankment and transportation to embankment	3,400,000 cu. yds., at twenty-three cents (\$23) per cu. yd.	713,000.00
15	Excavation; rock, in borrow pits for embankment, except cobble fill, and transportation to embankment and to spillway and diversion channels	95,000 cu. yds., at two dollars (\$2.00) per cu. yd.	190,000.00
16	Excavation, all classes, and separation of excavation in borrow pits for cobble fill and transportation to embankment	50,000 cu. yds., at thirty-five cents (\$.35) per cu. yd.	17,500.00
17	Backfill about structures	45,000 cu. yds., at fifty cents (\$.50) per cu. yd.	22,500.00
18	Refill of diversion channel	35,000 cu. yds., at ten cents (\$.10) per cu. yd.	3,500.00
19	Earth fill in embankment	3,200,000 cu. yds., at five cents (\$.05) per cu. yd.	160,000.00
20	Cobble and sluiced gravel fill at downstream toe of embankment	80,000 cu. yds., at twenty-five cents (\$.25) per cu. yd.	20,000.00
21	Cobble and rock fills on slopes of embankment	275,000 cu. yds., at fifteen cents (\$.15) per cu. yd.	41,250.00
22	Riprap on upstream slope of embankment and in inlet channel to spillway	123,000 cu. yds., at twenty cents (\$.20) per cu. yd.	24,600.00
23	Dumped riprap in outlets of spillway and diversion channels	3,700 cu. yds., at twenty cents (\$.20) per cu. yd.	740.00
24	Constructing 12-inch diameter sewer-pipe drains with uncemented joints, embedded in gravel	2,200 lin. ft., at one dollar (\$1.00) per lin. ft.	2,200.00
25	Constructing 8-inch diameter sewer-pipe drains with uncemented joints, embedded in gravel	3,800 lin. ft., at ninety cents (\$.90) per lin. ft.	3,420.00

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Item No.	Work or material.	Quantity and price	Amount
26	Constructing 6-inch diameter sewer-pipe drains with uncemented joints, embedded in gravel	5,100 lin. ft., at eighty cents (\$.80) per lin. ft.	\$4,080.00
27	Constructing 4-inch diameter sewer-pipe drains with uncemented joints, embedded in gravel	3,300 lin. ft., at seventy cents (\$.70) per lin. ft.	2,310.00
28	Porous concrete	70 cu. yds., at twenty dollars (\$20.00) per cu. yd.	1,400.00
29	Drilling weep holes	120 lin. ft., at two dollars (\$2.00) per lin. ft.	240.00
30	Drilling grout holes not more than 25 feet deep	2,200 lin. ft., at one dollar (\$1.00) per lin. ft.	2,200.00
31	Drilling grout holes more than 25 feet and not more than 50 feet deep	5,500 lin. ft., at one dollar fifty cents (\$1.50) per lin. ft.	8,250.00
32	Installing grout pipe and fittings	3,800 pounds, at thirty cents (\$.30) per pound.	1,140.00
33	Pressure grouting	7,700 cu. ft., at one dollar (\$1.00) per cu. ft.	7,700.00
34	Drilling holes for anchor bars and grouting bars in place	3,700 lin. ft., at one dollar (\$1.00) per lin. ft.	3,700.00
35	Concrete in embankment cut-off walls	1,500 cu. yds., at thirteen dollars (\$13.00) per cu. yd.	19,500.00
36	Concrete in outlet-works trash - rack structure, transition, gate chamber, and shaft	1,200 cu. yds., at twenty dollars (\$20.00) per cu. yd.	24,000.00
37	Concrete in outlet conduit.	2,500 cu. yds., at fourteen dollars (\$14.00) per cu. yd.	35,000.00
38	Concrete in floors of spillway and outlet-works channels	7,700 cu. yds., at ten dollars (\$10.00) per cu. yd.	77,000.00
39	Concrete in spillway and outlet-works channels, except floors	9,600 cu. yds., at fifteen dollars (\$15.00) per cu. yd.	144,000.00
40	Concrete in control house	60 cu. yds., at forty dollars (\$40.00) per cu. yd.	2,400.00
41	Concrete in parapet and curb walls	1,700 cu. yds., at fifteen dollars (\$15.00) per cu. yd.	\$25,500.00

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Item No.	Work or material	Quantity and price	Amount
42	Placing reinforcement bars	2,770,000 pounds, at one and seven tenths cents (\$.017) per pound.....	\$47,090.00
43	Installing metal sealing strips	1,000 lin. ft., at fifty cents (\$.50) per lin. ft.....	500.00
44	Installing elastic filler material in expansion joints	2,000 sq. ft., at fifty cents (\$.50) per sq. ft.....	1,000.00
45	Special finishing of concrete surfaces	2,300 sq. yds., at one dollar (\$1.00) per sq. yd.....	2,300.00
46	Construction of control house except concrete	For the lump sum of one thousand dollars.....	1,000.00
47	Construction of log-curb drop in diversion channel	For the lump sum of sixteen thousand dollars.....	16,000.00
48	Installing trash-rack metal-work	55,000 pounds, at two cents (\$.02) per pound.....	1,100.00
49	Installing high-pressure hydraulically operated slide gates and metal-conduit linings	173,000 pounds, at three cents (\$.03) per pound.....	5,190.00
50	Installing control apparatus for high-pressure slide gates	10,000 pounds, at five cents (\$.05) per pound.....	500.00
51	Installing radial gates and automatic-operating mechanisms	250,000 pounds, at three cents (\$.03) per pound.....	7,500.00
52	Placing bituminous material in float drums	60,000 pounds, at one and one-half cents (\$.015) per pound.....	900.00
53	Installing radial-gate hoists	10,500 pounds, at ten cents (\$.10) per pound.....	1,400.00
54	Installing metal spiral stairway	14,000 pounds, at ten cents (\$.10) per pound.....	1,400.00
55	Installing pipe handrails	7,000 pounds, at eight cents (\$.08) per pound.....	560.00
56	Installing miscellaneous metalwork	12,000 pounds, at five cents (\$.05) per pound.....	600.00
57	Installing electrical metal conduit 1½ inches or less in diameter	660 lin. ft., at twenty cents (\$.20) per lin. ft.....	120.00
58	Installing electrical conductors	220 pounds, at fifty cents (\$.50) per pound.....	100.00
59	Installing electrical apparatus	2,500 pounds, at twenty cents (\$.20) per pound.....	500.00

Total for Schedule.....\$2,115,870.00

SPECIFICATIONS
GENERAL CONDITIONS

* * * * *

4. *Rights-of-way.*—The site for the installation of machinery or the right-of-way for the works to be constructed under this contract and for necessary borrow pits, channels, spoil banks, ditches, roads, etc., will be provided by the Government.

5. *Quantities and unit prices.*—The quantities noted in the schedule are approximations for comparing bids, and no claim shall be made against the Government for excess or deficiency therein, actual or relative. Payment at the prices agreed upon will be in full for the completed work and will cover materials, supplies, labor, tools, machinery, and all other expenditures incident to satisfactory compliance with the contract, unless otherwise specifically provided.

6. *Staking out work.*—The work to be done will be staked out for the contractor who shall, without cost to the Government, provide such material and give such assistance as may be required by the contracting officer.

7. *Bench marks and survey stakes.*—Bench marks and survey stakes shall be preserved by the contractor, and in case of their destruction or removal by him or his employees, they will be replaced by the contracting officer at the contractor's expense, and his sureties shall be liable therefor.

8. *Data to be furnished by contractor.*—The contracting officer, through his authorized agents, shall have access to all pay rolls, records of personnel, invoices of materials, and any and all other data relevant to the performance of the contract or necessary to determine its cost, and the contractor shall furnish at the end of each month an itemized statement in a form satisfactory to the contracting officer of the cost of all work under the contract.

9. *Sanitation.*—The contracting officer may establish sanitary and police rules and regulations for all forces employed under this contract, and if the contractor fails to enforce these rules, the contracting officer may enforce them at the expense of the contractor.

10. *Extras.*—The contractor shall, when ordered in writing by the contracting officer, perform extra work and furnish extra material, not covered by the specifications or included in the schedule, but forming an inseparable part of the work contracted for. Extra work and material will ordinarily be paid for at a lump-sum or unit price agreed upon by the contractor and the contracting officer and stated in the order. Whenever in the judgment of the contracting officer it is impracticable because of the nature of the

work or for any other reason to fix the price in the order, the extra work and material shall be paid for at actual necessary cost as determined by the contracting officer, plus 10 percent for superintendence, general expense, and profit. The actual necessary cost will include all expenditures for material, labor (including compensation insurance), and supplies furnished by the contractor, and a reasonable allowance for the use of his plant and equipment, where required, to be agreed upon in writing before the work is begun, but will in no case include any allowance for office expenses, general superintendence, or other general expenses.

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14. *Protests.*—If the contractor considers any work demanded of him to be outside the requirements of the contract, or considers any record or ruling of the contracting officer or of the inspectors to be unfair, he shall immediately upon such work being demanded or such record or ruling being made, ask for written instructions or decision, whereupon he shall proceed without delay to perform the work or to conform to the record or ruling, and, within 10 days after date of receipt of the written instructions or decision, he shall file a written protest with the contracting officer, stating clearly and in detail the basis of his objections. Except for such protests or objections as are made of record in the manner herein specified and with the time limit stated, the records, rulings, instructions, or decisions of the contracting officer shall be final and conclusive. Instructions and/or decisions of the contracting officer contained in letters transmitting drawings to the contractor shall be considered as written instructions or decisions subject to protest or objections as herein provided.

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16. *Payments.*—In preparing estimates for partial payments the material delivered on the site and preparatory work done will not be taken into consideration.

SPECIAL CONDITIONS.

17. *The requirement.*—It is required that there be constructed and completed, in accordance with these specifications and the drawings listed in paragraph 21 hereof, the Vallecito Dam, Pine River project, Colorado. The work is located on the Pine River about 23 miles north of Bayfield, Colorado, as shown on the location map.

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19. *Forty-hour week.*—Except in executive, administrative, and supervisory positions, so far as practicable and feasible, in the judgment of the contracting officer, no individual directly employed

on the project shall be permitted to work more than forty hours in any one week.

20. *Description.*—The principal features involved in the construction of the Vallecito Dam are the dam across the Pine River, a reinforced-concrete outlet conduit constructed in open cut at the right abutment, and a concrete-lined open-channel spillway at the same abutment. The dam will have a crest length of approximately 4,000 feet and a maximum height of about 125 feet above the bed of the stream. The dam will consist of a moistened and rolled embankment of clay, sand, and gravel with a 3-foot blanket of
52 rock riprap on the upstream face and a cobble and rock fill of increasing thickness from crest to toe on the downstream slope. The outlet conduit will have a length of approximately 611 feet and will be provided with a reinforced-concrete trash rack at the inlet end. The flow of water through the conduit will be controlled by four 5-foot by 5-foot hydraulically operated slide gates installed in a gate chamber located about 38 feet upstream from the axis of the dam. Two of the gates will be used to regulate the flow of water and two for emergency purposes. A metal spiral stairway installed in a vertical concrete shaft will provide access to the gate chamber from a control house on the crest of the dam. The control mechanism for the slide gates will be installed in the control house, and the control piping will be carried down the stairway shaft to the gates. The outlet conduit will discharge into a concrete-lined open channel which will discharge into the spillway channel. The spillway will be a concrete-lined open channel approximately 2,330 feet long, including the stilling basin at the downstream end. The discharge over the spillway will be controlled by three radial gates, each 37 feet long and 19 feet high, installed on the crest of the spillway.

21. *Drawings.*—The following drawings are made a part of these specifications:

1. (28646) 191-D-41—Location map.
2. (28647) 191-D-42—Hydrographs of Pine River.
3. (28648) 191-D-43—Map of reservoir area.
4. (28649) 191-D-44—Location and log of drill holes and test pits.
5. (28650) 191-D-45—Borrow pit and test-hole data.
6. (28651) 191-D-46—General plan and sections.
7. (28652) 191-D-47—River diversion—Plan, profiles, and sections.
8. (28653) 191-D-48—River diversion—Log drop details.
9. (28654) 191-D-49—Spillway—Plan and sections.
- 53 10. (28655) 191-D-51—Spillway—Gate structure details.

11. (28656) 191-D-51—Spillway—Stilling basin details.
12. (29334) 191-D-52—Spillway—37-foot by 19-foot automatic radial gate—Installation.
13. (29335) 191-D-53—Outlet works—Conduit alinement, profile and sections.
14. (29336) 191-D-54—Outlet works—Gate chamber and control house.
15. (29337) 191-D-55—Outlet works—Inlet and outlet structures.
16. (28218) 40-D-2323—5-foot by 5-foot high-pressure gate—Assembly with hydraulic hoist.
17. (29338) 191-D-57—Electrical installation (sheet 1 of 2).
18. (29339) 191-D-58—Electrical installation (sheet 2 of 2).
19. (29340) 191-D-59—Construction program.

The drawings which form a part of these specifications show the work as definitely and in as much detail as is possible at the present stage of the development of the design. The attached drawings will be supplemented or superseded by such additional and detail drawings as may be necessary or desirable as the work progresses. Such drawings, which will show details not shown on the attached drawings, for all features of the work and for the installation of machinery or equipment not yet purchased, will not be considered to involve changes or extras within the meaning of articles 3 and 5 of the contract and paragraph 10 of these specifications. The contractor will be required to perform the work on these features, and in accordance with the additional and detail drawings mentioned above, at the applicable unit prices bid in the schedule for such work or work of a similar nature, as determined by the contracting officer. The contractor will be furnished such additional

54 copies of the specifications and drawings as may be required for carrying out the work. Contact prints of the original drawings from which the attached reductions were made will be furnished to the contractor for construction purposes, upon request.

22. *Commencement, prosecution, and completion of work.*—The contractor shall begin work within thirty (30) calendar days after date of receipt of notice to proceed, and shall complete all of the work within thirteen hundred and fifty (1350) calendar days from the date of receipt of such notice. The contractor shall at all times during the continuance of the contract prosecute the work with such forces and equipment as in the judgment of the contracting officer are sufficient to complete it within the specified period of time.

24. *Construction program.*—The contractor's construction operations shall be subject at all times to the approval of the contracting

officer. The capacity of the contractor's construction plant, sequence of operations, and methods of operation shall be such as to insure the completion of the work within the period of time specified. A tentative construction program has been prepared by the Government and is shown on the drawings, which program, if followed, will result in the completion of the work within the period of time specified in paragraph 22. The construction program is based on an assumption that notice to proceed will be received by the contractor on April 1, 1938. The construction program shown on the drawings is tentative only, and the Government assumes no responsibility for any use that bidders or the contractor may make thereof or for any deductions or conclusions that may be made from the program. The tentative construction program is shown on the drawings solely to assist bidders and the contractor in preparing their own construction programs. None of the statements in this paragraph nor anything on the tentative construction program shall

relieve the contractor from the obligation to commence,
55 prosecute, and complete the work as provided in paragraph

22. Within 60 calendar days after date of receipt of notice to proceed, the contractor shall furnish the contracting officer a complete construction program showing in detail his proposed program of operations. Revised construction programs shall be submitted by the contractor at intervals of not more than six months, and in addition thereto, the contractor shall immediately advise the contracting officer of any proposed changes in his construction program.

25. *Materials furnished by the Government.*—The Government will furnish cement for use in concrete, mortar, and grout; admixtures, if required, for use in concrete; reinforcement bars; anchor bars, rods, and bolts, including cinch anchors; metal pipe, fittings, and valves for permanent installation; grouting units for contraction joint grouting; pipe and fittings for handrails; slip-joint metal pipe for reservoir intake to float wells; concrete or clay sewer pipe for drains; metal drain inlets; cast-iron soil pipe and fittings; trash-rack bars and castings; stop-log guides; gates, gate hoists, gate hangers, and operating and control mechanisms; conduit lining castings for outlet works; metal bearing plates for concrete bridge over spillway; structural steel angles for protection at edges of dentated sills; floor plates and gratings; hatchway, sump, and man-hole frames and covers; metal spiral stairway; metal ladders and ladder rungs; metal sealing strips; welding rods for field erection and installation of metalwork; heavy burlap for use over drains; materials for coating and filling joints; motor-driven ventilating blower; sheet-metal air duct; crimped metal sleeve for air shaft; lumber for the roof of the control house, but not lumber for forms or for other temporary purposes; bolts, washers, screws, and spikes

and nails twentypenny or larger in size to be used in the completed structure; material for drift pins for the log-crib drop; all doors, windows, ventilators, louvers, hardware, and roofing materials for the control house; gasoline-engine-driven generator; gasoline supply tank and piping; paint and coating materials; electrical conduits, fittings, and conductors; and also all other materials not specifically mentioned in this paragraph or in paragraph 26 that will become a part of the completed construction work. All materials furnished by the Government will be delivered to the contractor f.o.b. cars at Ignacio, Colorado. The contractor shall haul all materials from the point of delivery to the work; shall provide suitable warehouses or other means of protection satisfactory to the contracting officer for such of the materials as, in the opinion of the contracting officer, require storage or protection; and will be charged for any materials lost or damaged after delivery, except as otherwise specifically provided, the same amounts that the materials cost the Government at the point of delivery to the contractor. The contractor shall be responsible for the prompt unloading of materials delivered on cars and for proper care of the materials, and will be held liable for any demurrage charges incurred due to failure to unload cars promptly. The contractor shall report to the contracting officer, in writing, within 24 hours after unloading any shortage in or damage to materials when delivered. The cost of unloading, hauling, storing, and caring for all materials furnished by the Government shall be included in the prices bid for the work in which the materials are to be used. The cost of handling and installing minor miscellaneous items of timber, metal, or other work, for which specific prices are not provided in the schedule, shall be included in the prices bid for work to which they are appurtenant, as determined by the contracting officer. The contractor shall return to the Government, at the dam site, as directed by the contracting officer, all unused materials, and will be charged for any materials not used and not returned the same amounts that the materials cost the Government at the point of delivery to the contractor. The contractor shall return to the Government at Ignacio, Colorado, as directed by the contracting officer, all returnable oil barrels, spools, reels, and other returnable shipping accessories, and will be charged for any such accessories not returned, or damaged to such an extent that they are not returnable, the same amounts that the Government is required to pay for such accessories.

26. *Materials to be furnished by the contractor.*—The contractor will be required to furnish all sand and broken rock or gravel for concrete; all sand for mortar and grout; all gravel for embedding drain pipes; all backfill materials; all form materials, including oil for oiling forms; all logs required for log cribs; all lumber for

lining the log-crib drop; cable, anchor bolts, strap iron, belting, and all other material, except material for drift pins, for the log-crib drop; all boulders, cobbles, rock fragments, gravel, and rock spalls for rock fills in log cribs; all spikes and nails less than twenty-penny in size to be used in structures; all wire, wire ties, or other appliances used for holding forms and for securing reinforcement bars; metal or other temporary supports, if used, for reinforcement bars, pipe, and other metalwork; all water used for mixing, cleaning, and curing concrete, for grouting operations, and for moistening embankment and backfill materials; lead and tarred oakum for cast-iron soil pipe joints; oakum or other suitable materials for calking grout and drain pipes; joint compound for highpressure piping; all insulating tape and compounds, solder, and flux for electrical installations; and also all other materials not a part of the completed construction work required for the completion of the contract. The contractor shall haul all of these materials as well as all materials delivered to the contractor by the Government. The cost of hauling, storing, and handling all of the materials described above and of furnishing all of the materials required to be furnished by the contractor shall be included in the prices bid in the schedule for the work for which the materials are required.

58 28. *Records of test pits and borings.*—The drawings included in these specifications show the available records of test pits dug and borings made at or near the dam site. The Government does not guarantee any interpretation of these records or the correctness of any information shown on the drawings relative to geological conditions. Bidders and the contractor must assume all responsibility for deductions and conclusions as to the nature of the rock and other materials to be excavated, the difficulties of making and maintaining the required excavations and of doing other work affected by the geology of the site of the work, and for the final preparation of the foundations for the dam and other structures.

29. *River discharge records.*—Hydrographs of the Pine River at gaging stations 2 miles and 20 miles below the dam site are shown on the drawings. The hydrographs are included in the drawings for the convenience of bidders and the contractor. The Government does not guarantee the reliability or accuracy of any of the hydrographs and assumes no responsibility for any deductions, conclusions, or interpretations which may be made from them.

30. *Right to change location and plans.*—When additional information regarding foundation or other conditions becomes available as a result of the excavation work, further testing, or otherwise, it may be found desirable to change the location, alinement, dimensions, or design of the dam or appurtenant works to conform to

such conditions. The Government reserves the right to make such reasonable changes as, in the opinion of the contracting officer, may be considered necessary or desirable, and the contractor shall be entitled to no extra compensation because of such changes, except that any increase in the amount of excavation, concrete, or other required work, for which items are provided in the schedule, will be paid for at the unit prices bid therefor in the schedule. The contractor's plant shall be laid out and his operations shall be conducted so as to accommodate any reasonable change in the location and design of the dam and appurtenant works, or any part thereof, without additional cost to the Government.

31. *Lines and grades.*—The contractor shall provide such drill holes, forms, ladders, spikes, nails, light, and such assistance as may be required by the contracting officer in giving lines and grades. The contracting officer's marks shall be carefully preserved by the contractor until they have served their purpose. Work shall be suspended at such points and for such reasonable time as the contracting officer may require to transfer lines and to mark points for line and grade. No additional compensation will be paid to the contractor for required assistance in setting lines and grades or for loss of time on account of such necessary suspension of work or otherwise on account of the requirements of this paragraph.

34. *Roads.*—The approximate locations of existing roads in the vicinity of the work are shown on the drawings. Access to the work from existing roads shall be provided by the contractor at his own expense. The Government assumes no responsibility for the condition or maintenance of any road or structure thereon that may be used by the contractor in performing the work under these specifications or in traveling to and from the site of the work. No payment will be made to the contractor by the Government for any work done in constructing, improving, repairing, or maintaining any road, highway, or structure thereon for use in the performance of the work under these specifications. Roads subject to interference by the work shall be kept open. The contractor shall provide, erect, and maintain all necessary barricades, suitable and sufficient red lights, danger signals and signs, and shall take all necessary precautions for the protection of the work and the safety of the public. Highways and roads closed to traffic shall be protected by effective barricades on which shall be placed acceptable warning and detour signs. All barricades and obstructions shall be illuminated at night, and all lights shall be kept burning from sunset until sunrise.

35. *Use of construction facilities.*—It is possible that work at or

in the vicinity of the Vallecito dam site will be performed by the Government or by other contractors during the period covered by the contract under these specifications. The contractor shall permit full use, without charge therefor, by the Government and/or other contractors of roads, bridges, foot bridges, lighting, and such other facilities constructed by the contractor for use in the performance of the contract under these specifications, and usable jointly by the contractor, the Government, and other contractors, as are available for such use without direct additional cost to the contractor.

36. *Timber for use of contractor.*—Any available timber within the area to be flooded by the reservoir downstream from the clearing line shown on drawing no. 191-D-45 may be cut and used by the contractor for construction purposes or for fuel. Cutting shall be done as close to the ground as practicable as determined by the contracting officer: *Provided*, That a maximum height of stumps of more than two feet will not be permitted. All branches and other unused parts of trees and brush cut by the contractor shall be burned or otherwise disposed of as provided in paragraph 40.

37. *Sand and gravel deposits.*—Sand and broken rock or gravel for concrete and sand for mortar shall be furnished by the contractor and may be obtained from the natural deposits shown on the drawings or from any other source approved by the contracting officer. Preliminary investigations based on test pits dug at a limited number of points in gravel deposits "A" and "B" and sand deposit "C", shown on the drawings, indicate that the sand in deposit "C" has a favorable grading but that the sand in deposits

61 "A" and "B" is too coarse and will require the addition of fine blending sand. The coarse aggregates in deposits "A" and "B" apparently contain an excess of soft particles, and some method of removing these particles may be necessary. However, the Government assumes no responsibility for the accuracy of the above statements relative to the quality and grading of the materials in the deposits or for any conclusions which may be drawn therefrom relative to the amount of work required to produce aggregates meeting the requirements of these specifications. If deposits to be used by the contractor are located at points approved by the contracting officer on the property of the Government or on withdrawn public land in the vicinity of the work, no charge will be made to the contractor for materials taken from such deposits and used in the work covered by these specifications. Such deposits shall be located and operated so as not to mar the usefulness or appearance of any part of the work or of any other property of the Government and shall be operated so as to reduce as little as practicable their future usefulness or value. Any royalties or other charges required to be paid for materials taken from deposits located

on private land or secured from other sources shall be paid by the contractor. The approval of deposits by the contracting officer shall not be construed as constituting the approval of all materials taken from the deposits, and the contractor will be held responsible for the specified quality of all such materials used in the work. To utilize the greatest practicable yield of suitable materials in the portions of the deposits being worked, the contractor may crush oversize material and any excess material of the gravel sizes to be furnished, until the full amount of the various sizes of gravel has been delivered: *Provided*, That, insofar as practicable, the amount of crushed material in any size of gravel shall not exceed that required to make up the deficiency in that particular size. *Provided further*, That the crushed material shall be uniformly blended with the uncrushed gravel. The crushing operations shall be subject at all times to the approval of the contracting officer.

62. The contractor shall be entitled to no compensation for material wasted from the gravel deposits, including excess material of any of the sizes into which the aggregate is required to be separated by the contractor and materials which have been discarded by reason of being below the minimum or above the maximum sizes specified for use. The contractor shall carefully clear the sites of the deposits, or as much thereof as may be required, of all trees, roots, brush, sed, soil, unsuitable sand and gravel, and other objectionable matter and shall develop and maintain the deposits in a condition suitable for the excavation and removal of the required materials. The sand and broken rock or gravel shall be washed unless written authority is given by the contracting officer to use unwashed sand and broken rock or gravel. The screening and washing of the aggregates shall be done at the deposits or at a point approved, in writing, by the contracting officer: *Provided*, That the location, time, sequence, and method of the washing operations shall be such as to insure that each of the various sizes of aggregate has a reasonably uniform and stable moisture content when delivered to the mixing plant. The water used for washing the aggregates shall be reasonably clean and shall be free from objectionable quantities of silt, organic matter, alkali, salts, and other impurities. If the aggregates are to be obtained from deposits other than those shown on the drawings, the contractor shall submit representative samples of the aggregates proposed for use in the work at least three months before aggregates are required for use. The samples shall be furnished in amounts directed by the contracting officer. The cost of all work required by this paragraph and all cost of aggregates secured elsewhere than from deposits located on Government land shall be included in the unit prices bid in the schedule for the items of work in which the materials obtained are used, which unit prices shall also include all expenses of the con-

63 tractor in crushing, screening, washing, blending, classifying, hauling, storing, mixing, and other necessary operations on the materials.

38. *Storage of water prior to completion of dam.*—The Government reserves the right to commence storing water in the reservoir at any time after the placing of concrete in the spillway structure and the placing of materials in the dam are completed to elevation 7646, and thereafter to maintain the water surface in the reservoir at any elevation not higher than 20 feet below the maximum possible elevation as fixed by the low controlling point of the then completed construction work. The installation of outlet gates and other operations of the contractor shall be arranged and timed; subject to the approval of the contracting officer, to permit the storage of water as soon as the dam and spillway have been constructed to the required elevation. Unless otherwise approved in writing by the contracting officer all portions of the embankment shall be completed to elevation 7646 at the same time and at that time the spillway shall also be completed to elevation 7646, and no operation of the contractor shall be permitted to interfere with or prevent beginning storage of water or the operation of the outlet works incident thereto at that time. No payment for any part of the work, in addition to that provided at the prices bid in the schedule, will be made to the contractor on account of the storage or release of water as provided in this paragraph.

39. *Diversion and care of river during construction and unwatering foundations.* The contractor shall construct and maintain all necessary cofferdams, channels, flumes, and/or other temporary diversion and protective works; shall furnish all materials required therefor; except the metalwork and cement for the log-crib drop as provided in paragraph 25, and shall furnish, install, maintain, and operate all necessary pumping and other equipment for unwatering the various parts of the work and for maintaining the foundations, cut-off trenches, and other parts of the work, free from water

64 as required for constructing each part of the work. The plan for the diversion of the river is shown on the drawings, and the contractor will not be permitted to deviate from this general plan or to construct diversion works of less capacity or of construction inferior to that shown on the drawings. The contractor will be paid under the appropriate items of the schedule for excavating and refilling the diversion channel, constructing the log-crib drop, and placing the riprap only to the dimensions shown on the drawings. However, the contractor shall be responsible for the adequacy and safety of the river diversion and shall, at his own expense, maintain the diversion channel and the log-crib drop, and the riprap in the diversion channel in a manner and in condition satisfactory to the contracting officer until they have served their

purpose. Should the contractor fail to promptly do any work or furnish any material necessary to maintain the diversion works in a satisfactory condition as determined by the contracting officer the Government will do such work and furnish any material required therefor and charge the cost thereof to the contractor. Nothing contained in this paragraph shall prevent the contractor from constructing, at his own expense, such additional capacity of the diversion works and channel or more adequate, substantial, or permanent construction of log-cribs as he may consider necessary, nor shall it be construed to relieve the contractor from sole responsibility for the river diversion. River discharge curves and diversion channel and outlet works capacity curves are shown on the drawings solely for the purpose of aiding the contractor to time his construction operations to prepare for such flood storage and/or to bypass such flows as may be necessary. The Government does not guarantee reliability or accuracy of any of these curves and assumes no responsibility for any deductions, conclusions, or interpretations which may be made from them. The contractor shall be responsible for and shall repair at the contractor's expense any damage to the foundations, embankment, or any other part
65 of the work caused for floods, water, or failure of any part of the diversion or protective works. After having served their purpose, all cofferdams and other temporary protective works downstream from the dam shall be removed from the river channel or leveled to give a slight appearance, so as not to interfere in any way with the operation or usefulness of the reservoir and in a manner satisfactory to the contracting officer. The upstream cofferdam shall be constructed as a part of the permanent dam embankment in accordance with the specifications for constructing such part of the dam, and when no longer needed for protection of the work, the top shall be graded to provide an 11 to 1 slope as shown on the drawings. All cofferdams or other temporary protective works constructed upstream from the dam and not a part of the permanent dam embankment shall be removed to the extent required to prevent obstruction in any degree whatever of the flow of water to the outlet works, and the materials thus removed shall be placed at the bottom of the upstream slope of the dam so as to form a toe blanket. The contractor shall not interrupt or interfere with the natural or required flow of water past the dam for any purpose without the approval of the contracting officer. The cost of furnishing all labor, equipment, and materials for constructing cofferdams, channels, flumes, or other diversion and protective works, removing or leveling such works where required, diverting the river, maintaining the work free from water as required, disposing of materials in the cofferdams, maintaining the diversion channel and log-crib drop, and of all other work required by this paragraph,

except the excavation and refill in the diversion channel, the construction of the log-crib drop, and placing the riprap in the diversion channel, shall be included in the lump-sum price bid in the schedule for diversion and care of river during construction and unwatering foundations: *Provided*, That any cofferdam or portion thereof constructed as a part of the permanent dam in accordance with these specifications will be paid for at the unit price per cubic
 66 yard bid in the schedule for such part of the dam. No progress payment will be made under the item of the schedule for diversion and care of river during construction and unwatering foundations until the first monthly payment made after the river is diverted through the outlet works and the embankment built throughout its length to elevation 76.20, at which time 75 percent of the lump-sum price bid therefor will be paid. The remainder of the lump-sum price will be included in the final payment under the contract.

EARTHWORK

40. *Clearing and grubbing*.—The right-of-way for the work to be performed under these specifications, where, in the judgment of the contracting officer, clearing is necessary, shall be cleared of all trees, brush, rubbish, and other objectionable matter, and the cleared materials shall be burned or otherwise disposed of as approved by the contracting officer. Existing improvements on the right-of-way to be cleared will be removed or otherwise disposed of by the Government. The contractor shall also cut all trees and all brush and stumps more than two feet high within the reservoir site and downstream from the clearing line shown on drawing no. 191-D-45, and all material of a combustible nature, including standing timber, dead timber, logs, snags, driftwood, debris, and all other combustible materials, shall be piled and burned or otherwise disposed of as provided in this paragraph or as directed by the contracting officer. No trees shall be cut outside of the areas designated by the contracting officer and all trees designated by the contracting officer downstream from the dam site shall be carefully protected from damage by the contractor's construction operations. Cutting on areas outside of the surface areas of required excavation and areas on which embankments are to be placed shall be done as close to the ground as practicable, and stumps more than 12 inches in height will not be permitted. Where directed by the contracting officer, the ground surface under all embankments and the
 67 surface of all excavation that is to be used for embankments or backfill shall be cleared of all stumps, roots, and vegetable matter of every kind. The stumps shall be pulled or otherwise removed, the roots shall be grubbed, and the stumps and roots shall be burned with other combustible material removed. All materials to be burned shall be neatly piled, and when in suitable condition

shall be completely burned. Piling for burning shall be done in such manner and such locations as to cause the least fire risk. No material shall be piled and burned above the high-water line of the reservoir. The reservoir site is within the limits of the San Juan National Forest, and all burning shall be done at such times and under such regulations as the proper Federal Forest Service officials shall direct. All burning shall be so thorough that the materials are reduced to ashes. No logs, branches, or charred pieces shall be permitted to remain. The contractor shall at all times take special precautions to prevent fire from spreading to the area outside the limits of the reservoir site. The contractor shall have available at all times a suitable supply of axes, saws, mattocks, shovels, and other necessary equipment and supplies for use in preventing and suppressing fires. The cost of all work described in this paragraph shall be included in the unit prices bid for other work in the schedule, and no additional allowance will be made to the contractor on account of any amount of such clearing and grubbing which may be required.

41. *Classification of excavation.*—Except as otherwise provided in these specifications, all materials moved in required excavations for the dam and appurtenant works will be measured in excavation only, to the neat lines shown on the drawings or prescribed by the contracting officer, and will be classified for payment as follows:

68 *Rock excavation.*—All solid rock in place which cannot be removed until loosened by blasting, barring, or wedging and all boulders or detached pieces of solid rock more than one cubic yard in volume. Solid rock under this class, as distinguished from soft or disintegrated rock under common excavation, which also requires blasting before removal, is defined as sound rock of such hardness and texture that it cannot be loosened or broken down by hand drifting picks. No material, except boulders or detached pieces of solid rock, will be classified as rock excavation, which is not actually loosened by blasting before removal, unless blasting is prohibited, and barring, wedging, or similar methods are prescribed by written order of the contracting officer.

Common excavation.—All material other than rock excavation; including, but not restricted to earth, gravel, and also such hard and compact material as hardpan, cemented gravel, and soft or disintegrated rock, which cannot be removed efficiently by team-drawn scrapers or excavating machinery until loosened by blasting; also all boulders or detached pieces of solid rock not exceeding one cubic yard in volume.

No additional allowance above the unit prices bid in the schedule for excavation of materials will be made on account of any of the materials being wet or frozen. It is desired that the contractor or the contractor's representative be present during measurement

of materials excavated. On written request of the contractor, made within 10 days after the receipt of any monthly estimate, a statement of the quantities and classifications between successive stations, or in otherwise designated locations, included in said estimate will be furnished to the contractor within 10 days after the receipt of such request. The statement will be considered as satisfactory to the contractor unless specific written objections thereto with reasons therefor are filed with the contracting officer within 10 days after receipt of said statement by the contractor or the contractor's representative on the work. Failure to file such written objections with reasons therefor within said 10 days shall be considered a waiver of all claims based on alleged erroneous estimates of quantities or classification of materials for the work covered by such statement.

69 42. *Blasting*.—Blasting will be permitted only when proper precautions are taken for the protection of persons, the work, and private property, and any damage done to the work or private property by blasting shall be repaired by the contractor at the contractor's expense. Caps or other exploders or fuses shall in no case be stored, transported, or kept in the same place in which dynamite or other explosives are stored, transported, or kept. The location and design of powder magazines, methods of transporting explosives, and, in general, the precautions taken to prevent accidents shall be subject to the approval of the contracting officer, but the contractor shall be liable for all injuries to or deaths of persons or damage to property caused by blasts or explosives.

43. *Open-cut excavation, general*.—Except as otherwise provided in these specifications for definite features of open-cut excavation or as otherwise shown on the drawings, open-cut excavation will be measured for payment to slopes of 1 to 1 for common excavation and $\frac{1}{4}$ to 1 for rock excavation, and, in the case of excavation for structures, to lateral dimensions of one foot outside of the foundations of the structures: *Provided*, That where the character of the material cut into is such that it can be trimmed to the required lines of the concrete structure and the concrete placed directly against the sides of the excavation, measurement for payment will be made only for the excavation within the neat lines of the structure: *Provided further*, That for any required excavation where, in the opinion of the contracting officer, the conditions warrant, the excavation will be measured for payment to the most practicable dimensions and lines as staked out or otherwise established by the contracting officer: *Provided, further*, That for trenches for pipe drains, except toe drains for the dam embankment, measurement for payment will be made only to the neat lines required to provide for the thickness of gravel fill around the drain pipes as shown on the drawings or as directed by the contracting officer. Where not to be covered with concrete, excavations shall be made to the

full dimensions required and shall be finished to the prescribed lines and grades in a workmanlike manner, except that sharp points of undisturbed ledge rock will be permitted to extend within the prescribed lines not more than six inches. The contractor shall prepare the foundations at structure sites in a manner suitable for forming foundations for the concrete structures. The bottom and side slopes of common excavation upon or against which concrete is to be placed shall be accurately finished by hand to the dimensions shown on the drawings or prescribed by the contracting officer, and the surfaces so prepared shall be moistened with water and tamped or rolled with suitable tools or equipment for the purpose of thoroughly compacting them and forming firm foundations upon or against which to place the concrete structures. If at any point in common excavation, material is excavated beyond the neat lines required to receive the structure, the overexcavation shall be filled with selected materials, in layers not more than six inches thick, moistened and thoroughly compacted by tamping or rolling in a manner satisfactory to the contracting officer. If at any point in common excavation the natural foundation material is disturbed or loosened during the excavation process, or otherwise, it shall be consolidated in a manner satisfactory to the contracting officer, or, where directed by the contracting officer, it shall be removed and replaced with selected material compacted to the satisfaction of the contracting officer. Where concrete is to be placed upon or against rock, the excavation shall be sufficient to provide for the minimum thickness of concrete at all points, and the prescribed average thickness shall be exceeded as little as possible. Measurement of such excavation for payment will be limited to the excavation required for the prescribed average thickness of the concrete for which measurement for payment will be made as provided in these specifications.

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Any and all excess excavation or overexcavation performed by the contractor for any purpose or reason, except as may be ordered in writing by the contracting officer, and whether or not due to the fault of the contractor, shall be at the expense of the contractor. No blasting that might injure the work will be permitted, and any damage done to the work by blasting, including the shattering of the material beyond the required excavation lines, shall be repaired by and at the expense of the contractor and in a manner satisfactory to the contracting officer. All cavities in rock excavations upon or against which concrete is to be placed, caused by careless excavation, as determined by the contracting officer, or by removal, as directed by the contracting officer, of rock or other foundation materials needlessly damaged by blasting or other operations of the contractor, shall be solidly filled with concrete entirely at the expense of the contractor, including the cost of all materials required therefor. Insofar as practicable, as determined by the con-

tracting officer, all suitable materials from required excavations shall be used in the embankment or in structure backfill; *Provided*, That all suitable materials from common excavation for the diversion channel, downstream portion of the spillway, outlet works, cut-off trench, toe drains, and from the cobble borrow pits shall be separated into material $2\frac{1}{2}$ inches or more in diameter and material less than $2\frac{1}{2}$ inches in diameter as provided in paragraphs 45, 46, 47, 48, and 52: The contractor shall be entitled to no additional compensation above the unit prices bid in the schedule for excavation, embankment, and backfill, due to the necessity for renandling any materials which, on account of orders of the contracting officer or for any other reason, are laid aside in temporary storage piles prior to transporting to embankment or backfill. Except as otherwise provided in paragraph 46, the unit prices

72 bid in the schedule for excavation shall include all costs in connection with separating the materials into sizes, where required, and the temporary and permanent disposal or wasting of the materials excavated: *Provided*, That all materials actually placed in the embankment or in structure backfill will again be included for payment under appropriate items of the schedule for embankment or backfill. Except as otherwise provided in paragraph 39 for diversion and care of river during construction and unwatering foundations, the unit prices bid in the schedule for excavation shall include the cost of all labor and materials for cofferdams and other temporary construction and of all pumping, bailing, draining, and all other work necessary to maintain the excavation in good order during construction and of removing such temporary construction where required.

44. *Stripping for embankment.*—The entire area to be occupied by the dam, or such portions thereof as may be directed by the contracting officer, including the areas over the temporary diversion channel, over the outlet conduit, and over the toe drain and cut-off trenches, shall be stripped or excavated to a sufficient depth to remove all materials not suitable for the foundation, as determined by the contracting officer, and only to the lines and grades established by the contracting officer. The unsuitable materials to be removed shall include top soil, all rubbish, vegetable matter of every kind, roots, and all other perishable or objectionable materials which might interfere with the bondings of the embankment with the foundation or the proper compacting of the materials in the embankment or which may be otherwise objectionable. All stripped materials shall be disposed of as provided in paragraph 53. Measurement, for payment, of stripping for embankment will be made in excavation only and to the neat lines as staked out or otherwise established by the contracting officer. Payment for "Excavation, stripping for embankment" will be made at the unit price per cubic yard bid therefor in the schedule, which unit price

shall include the cost of all work provided for in this paragraph.

73 45. *Excavation for diversion channel.*—The items of the schedule for excavation for diversion channel cover all excavation required for the construction of the diversion channel to the dimensions shown on the drawings, including all excavation required for the construction of the log-crib drop at the downstream end of the channel to the dimensions shown on the drawings. Except as otherwise provided in paragraph 39 for construction of the diversion channel to larger dimensions at the expense of the contractor, all excavation shall be made to the lines, grades, and dimensions shown on the drawings and in accordance with the provisions of paragraph 43. The contractor shall separate the suitable material from common excavation into cobbles $2\frac{1}{2}$ inches or more in diameter, which shall be placed in the cobble-fill portion of the embankment, and material less than $2\frac{1}{2}$ inches in diameter, which shall be placed in the earth-fill portion of the embankment. Measurement, for payment of excavation for diversion channel will be made only to the lines shown on the drawing below the level of the embankment foundation after stripping, and payment for such excavation will be made at the unit prices per cubic yard bid in the schedule for excavation for diversion channel.

46. *Excavation for spillway.*—The items of the schedule for excavation for spillway include all required excavation for the spillway, including approach and outlet channels, stilling basin, wing walls, retaining walls, cut-offs, buttresses, drains, and all other parts of the structure and also includes the excavation for the drain ditch on the west side of the stilling basin at the downstream end of the spillway, and the excavation for the portion of the road at the end of the dam as shown on the drawings. All excavations shall be made to the lines, grades, and dimensions shown on the drawings or established by the contracting officer and in accordance with the provisions of paragraph 43. The contractor shall

74 be entitled to no additional allowance above the unit prices bid in the schedule for excavation for spillway by reason of changes in the lines, grades, and slopes of required excavations, though changes in the quantities of excavation will be covered in the estimates. The contractor shall separate the suitable material from common excavation for spillway downstream from station 15+00 including the excavation for the drain ditch on the west side of the stilling basin at the downstream end of the spillway, into cobbles $2\frac{1}{2}$ inches or more in diameter, which shall be placed in the cobble-fill portion of the embankment and material less than $2\frac{1}{2}$ inches in diameter, which shall be placed in the earth-fill portion of the embankment. Common excavation from the spillway upstream from station 15+00 will not be required to be separated into sizes. Payment for the excavation described

in this paragraph will be made at the unit prices bid in the schedule for excavation for spillway.

47. *Excavation for outlet works.*—The items of the schedule for excavation for outlet works include all required excavation for the outlet works including approach and outlet channels, retaining walls, buttresses, drains, and all other parts of the structure. All excavations shall be made to the lines, grades, and dimensions shown on the drawings or established by the contracting officer, and in accordance with the provisions of paragraph 43. The contractor shall be entitled to no additional allowance above the unit prices bid in the schedule for excavation for outlet works by reason of changes in the lines, grades, and slopes of required excavations, though changes in the quantities of excavation will be covered in the estimates. The contractor shall separate the suitable material from common excavation for outlet works into cobbles $2\frac{1}{2}$ inches or more in diameter, which shall be placed in the cobble-fill portion of the embankment and material less than $2\frac{1}{2}$ inches in diameter, which shall be placed in the earth-fill portion of the embankment. Measurement, for payment, of the excavation for the portion of the outlet works under the embankment will be made

only to the lines shown on the drawings or established by the contracting officer below the level of the embankment foundation after stripping. Payment for the excavation described in this paragraph will be made at the unit prices bid in the schedule for excavation for outlet works.

48. *Excavation for embankment toe drains and cut-off trench.*—A cut-off trench with sloping sides under the upstream portion of the embankment and trenches for the 8-inch and 12-inch diameter toe drains under the downstream portion of the embankment shall be excavated in the embankment foundation as shown on the drawings or as directed by the contracting officer. The contemplated alignments and cross-sectional dimensions of the trenches are shown on the drawings; but the alignments and dimensions shown will be subject to such changes as may be found necessary by the contracting officer to adapt the toe drains and cut-off trench to the conditions disclosed by the excavation, and the contractor shall be entitled to no additional allowance above the unit prices bid in the schedule for excavation for embankment toe drains and cut-off trench on account of such changes. Accurate trimming of the slopes of the trenches will not be required but the trenches shall conform as closely as practicable to the lines and grades shown on the drawings or established by the contracting officer. No blasting will be permitted in the cut-off trenches unless such blasting is approved in writing by the contracting officer. The contractor shall separate the suitable material from common excavation for toe drains and cut-off trench into cobbles $2\frac{1}{2}$ inches or more in

diameter, which shall be placed in the cobble-fill portion of the embankment, and material less than $2\frac{1}{2}$ inches in diameter, which shall be placed in the earth-fill portion of the embankment. Measurement, for payment, of the excavation for the trenches described in this paragraph will be made only to the lines shown on the drawings or established by the contracting officer, below the level of the embankment foundation after stripping, and payment for such excavation will be made at the unit prices per cubic yard bid in the schedule for excavation for embankment toe drains and cut-off trench.

49. *Excavation for concrete cut-off wall footings.*—Where the cut-off trench with sloping sides under the upstream portion of the embankment is excavated to rock, trenches for footings for concrete cut-off walls shall be excavated in the bottom of the cut-off trench, as shown on the drawings or as directed by the contracting officer. The trenches shall have vertical sides and shall be excavated to the alignments and dimensions shown on the drawings or as directed by the contracting officer. The excavation shall be performed by the use of hand tools or power cutting drills, in such a manner as to prevent shattering the sides or bottom of the trench and no blasting will be permitted. Measurement, for payment, of excavation for concrete cut-off wall footings will be made only to the neat lines shown on the drawings or established by the contracting officer, and payment therefor will be made at the unit price per cubic yard bid in the schedule for excavation, rock, for concrete cut-off wall footings.

50. *Backfill about structures.*—Backfill is defined as excavation refill or embankment material that is required to be placed under these specifications and which cannot be deposited around the structures or in adjacent embankments until the structures are completed; *Provided*, That embankment material surrounding or abutting the concrete cut-off walls, spillway structure, trash-rack structure, outlet conduit, spiral-stairway shaft, and other structures or parts of structures against which compacted dam embankment is placed after the construction of the structure, will be classified as embankment and will not be paid for as backfill. The contractor shall place and thoroughly compact all backfill about structures. The compaction obtained shall be equivalent to that specified in paragraph 55 for the earth-fill portion of the dam embankment, and, in inaccessible places where the backfill material cannot be rolled, pneumatic or electrical backfill tampers shall be

77 used. The item of the schedule for backfill about structures includes the continuous selected gravel backfill required to be placed at the base of the back side of the cantilever walls of the spillway and outlet channels: *Provided*, That the gravel backfill need not be compacted. The material used for backfill, the amount

thereof, and the manner of depositing the material shall be subject to the approval of the contracting officer. Material used for backfill will be measured in place about the structures and to the lines of the required backfill as established by the contracting officer, and payment for backfill about structures will be made at the unit price per cubic yard bid therefor in the schedule, which unit price shall include the cost of all work connected therewith except that payment for the original excavation of material required for backfill will be made as provided in paragraphs 43 and 52.

51. *Refill of diversion channel.*—After the river has been diverted through the outlet works and the diversion channel is no longer required for diversion purposes, the portion of the channel downstream from the embankment shall be refilled to the lines established by the contracting officer. It will not be necessary to remove the log cribs at the downstream end of the channel before the channel is refilled. No special compacting of the refilled material will be required. Measurement for payment, of the refilled material will be made of the material in place in the diversion channel and to the lines, grades and dimensions shown on the drawings and payment therefor will be made at the unit price per cubic yard bid in the schedule for refill of diversion channel. If, as provided for in paragraph 39, the contractor elects to construct the diversion channel to a larger capacity than shown on the drawings, the additional excavation required to construct the channel to the larger size shall be refilled by and at the expense of the contractor.

52. *Borrow pits.*—All materials required for the construction of the dam embankment, for riprap for the spillway and
78 diversion channels, and for backfill, which are not available from required excavations, shall be taken from borrow pits as directed by the contracting officer. The location and extent of all borrow pits shall be as directed by the contracting officer, and the Government reserves the right to change the location of such borrow pits or to locate additional borrow pits as required, but such pits will be located as close as feasible to the work in which the borrowed materials are to be used. The rock for the riprap on the upstream slope of the dam embankment and for the spillway and diversion channels shall be obtained from a rock borrow pit near the existing road and approximately seven miles upstream from the dam site: *Provided*, That at the option of the contractor, the rock for the dumped riprap in the outlets of the spillway and diversion channels may be obtained from the river channel or vicinity upstream from the outlet of the spillway channel. No payment for overhaul will be made for rock materials excavated in the rock borrow pit and used for riprap on the upstream slope of the dam embankment or in the spillway or diversion channels. The limit of free haul for materials excavated from borrow pits for

the earth-fill and cobble and sluiced gravel-filled portions of the embankment will be 5,000 feet, and for cobbles excavated from borrow pits for the cobble-fill portion of the embankment will be 2,500 feet. Overhaul of earth-fill, cobble and sluiced gravel-fill, and cobble-fill materials placed on the embankment will be paid for at \$0.002 per cubic yard per 100-foot station. The amount of overhaul in station cubic yards for which payment will be made will be the excess, if any, of the sum of the products of the station haul distance and the number of cubic yards of material excavated from each borrow pit and placed in the embankment, over the sum of the total volume of earth-fill and cobble and sluiced gravel-fill material obtained from borrow pits times the specified free haul distance for earth borrow plus the total volume of cobble-fill material obtained from borrow pits times the specified free haul

79 distance for cobble borrow. The station haul distances will be measured along horizontal straight lines between the centers of gravity of the materials as found in excavation in the borrow pits and the center of gravity of the completed embankment. No progress payment will be made for overhaul, but all overhaul earnings under the contract will be included in the final estimate. Borrow-pit areas shall be cleared as provided in paragraph 40. Borrow pits shall be operated so as not to mar the usefulness or appearance of any part of the work of any other property of the Government, and borrow pits and the surfaces of wasted material shall be left in a reasonably smooth and even condition satisfactory to the contracting officer. The area of land between the cobble borrow pit and the river shall be kept in its original state and no improvements or removal of timber will be permitted on this area except with the written permission of the contracting officer. Should any borrow pits be located adjacent to the dam and below the level of the top of the dam, a berm of not less than 100 feet shall be left between the toe of the dam and the edge of the borrow pit, with provision for a side slope of 4 to 1 to the bottom of the borrow pit. In order to avoid the formation of pools, drainage ditches from borrow pits to the nearest outlets shall be constructed by the contractor, where, in the opinion of the contracting officer, such drainage ditches are necessary. The contractor shall carefully strip the sites of borrow pits, or as much thereof as may be required, of top soil, sod, loam, and other objectionable matter. The disposal of all materials wasted by stripping shall be subject to the approval of the contracting officer. Measurement for payment for stripping borrow pits will be made in excavation and will include only the stripping in locations and to the depths as directed by the contracting officer. Payment for stripping and disposal of materials wasted by stripping will be made at the unit price per cubic yard bid in the schedule for "Excavation, stripping

borrow pits." If materials unsuitable for embankment, rip-
80 rap, or backfill purposes are found in borrow pits, such materials shall be left in place or excavated and wasted, as directed by the contracting officer, and payment for excavation and disposal of unsuitable materials excavated and wasted by direction of the contracting officer will be made at the unit price per cubic yard bid in the schedule for "Excavation, stripping borrow pits." The contractor shall separate the cobbles 2½ inches or over in size from the materials excavated in the cobble borrow pits. The separated cobbles shall be placed in the cobble-fill portion of the embankment, and the undersize material, if suitable, in the opinion of the contracting officer, shall be placed in the earth-fill portion of the embankment. Materials excavated from cobble borrow pits will not be classified for payment. Payment for excavation in borrow pits and transportation to embankment and to spillway and diversion channels will be made at the unit prices per cubic yard bid therefor in the schedule, which unit prices shall include the entire cost of excavating the materials from the borrow pits, separating the material excavated from cobble borrow pits, and transporting the materials to the embankment and to the spillway and diversion channels: *Provided*, That all materials from borrow pits actually placed in the embankment, in the spillway and diversion channels, or in backfill will again be included for payment under appropriate items of embankment construction, riprap, or backfill. Measurement, for payment, of excavation in borrow pits will be made in excavation only and to the neat lines of excavations made by direction of the contracting officer.

53. *Disposal of excavated materials.*—Suitable materials from all required excavations and from all foundation stripping operations shall be used in the embankment, for backfill, or for other parts of the work. Excavated materials which are unsuitable for the above-described purposes and all unsuitable materials removed in stripping operation shall be wasted. This disposal of all excavated materials that are wasted shall be subject to the approval of the contracting officer. All waste piles shall be
81 located where, in the opinion of the contracting officer, they will not harmfully interfere with the natural flow of the river, with the operation of the reservoir, or with the discharge of water to or from the spillway or outlet works, and where they will not detract from the appearance of the completed structures or interfere with the accessibility of the structures for operation. Where required by the contracting officer, waste piles shall be leveled and trimmed to reasonably regular lines, and the contractor shall be entitled to no additional compensation on account of this requirement. The cost of disposing of all excavated materials that are wasted and of all other work described in this paragraph shall be included in

the unit prices bid in the schedule for excavation and stripping. As provided in paragraph 54, payment for placing materials from required excavations in the embankment will be made at the unit prices per cubic yard bid in the schedule for the particular items of embankment construction, which payment will be in addition to the payment for the excavation and transportation of materials.

EMBANKMENT.

54. *Embankment construction, general.*—For the purposes of these specifications, the term "embankment" includes the earth-fill portion of the dam, the cobble and sluiced gravel-fill at the downstream toe of the dam, the cobble and rock fills on the slopes of the dam, and the riprap on the upstream face of the dam. The embankment shall be constructed to the lines and grades established by the contracting officer, which, in general, will be the lines and grades shown on the drawings, increased by such heights and widths as may be determined by the contracting officer to be necessary to allow for settlement. No brush, roots, sod, or other perishable or unsuitable materials, as determined by the contracting officer, shall be placed in the embankment. The suitability of each part of the foundation for placing embankment materials thereon and of all materials for use in the embankment construction will be determined by the contracting officer. No material shall be placed in the embankment when either the material or the foundation or embankment on which it would be placed is frozen. The contractor shall maintain the embankment in a manner satisfactory to the contracting officer until the final completion and acceptance of all of the work under the contract. Each portion of the embankment shall be constructed in accordance with the specifications therefor, including the provisions of this paragraph. All portions of the required embankment, whether constructed of materials excavated for other required parts of the work or from borrow pits, will be measured and paid for in embankment, after compacting if required, which payment will be in addition to the payment made for the excavation, separation, and transportation of the required materials, and shall include the cost of rehandling materials taken from required excavations and deposited temporarily in storage piles, and placing the materials as herein specified. It may be feasible to transport a large portion of the materials which are excavated for other required parts of the work and which are suitable for embankment construction, directly to the embankment at the time of making the excavation, but the contractor shall be entitled to no additional compensation above the unit prices bid in the schedule for excavation and embankment by reason of it being necessary or required by the contracting officer, for any reason; that such excavated materials be deposited

in temporary storage piles prior to transporting to the embankment.

55. *Earth fill in embankment.*—The earth-fill portion of the embankment shall be constructed to the lines and grades shown on the drawings or established by the contracting officer. All portions of test-pit and cut-off trench excavation within the area to be covered by the embankments and below the required stripping lines for the embankment foundation shall be filled with compacted material as herein specified for earth fills and shall be considered as parts of the earth fill.

83 (a) *Preparation of foundations.*—No material shall be placed in the earth-fill portion of the dam until the foundation therefor has been unwatered and suitably prepared and has been approved by the contracting officer. The foundation for the earth fill shall be so prepared, by leveling and rolling, that the surface materials of the foundation will be as compact and well bonded with the first layer of the fill as herein specified for the subsequent layers of the earth fill.

(b) *Materials.*—The earth-fill portion of the dam shall consist of a mixture of the clay, sand, and gravel available from borrow pits in the vicinity of the work and from excavations required for other parts of the work. The contractor's operations in the excavation of the materials for the earth fill shall be such as will result in an acceptable gradation of the materials when compacted in the fill. The contracting officer will designate the depths of cut in all parts of the borrow pits and in portions of required excavations to be used in the embankment, necessary for obtaining the desired gradation of material, and the cuts shall be made to such designated depths. Each load of earth-fill material delivered on the embankment shall be the equivalent of a mixture of materials obtained from an approximately uniform strip or cutting from the full height of the face of the excavation.

(c) *Placing.*—The distribution and gradation of the materials throughout the earth-fill portion of the dam shall be such that the earth embankment will be free from lenses, pockets, streaks, or layers of material differing materially in texture or gradation from the surrounding material. The combined excavation and embankment-placing operations shall be such that the materials when compacted in the embankment will be blended sufficiently to secure the best practicable degree of compaction, impermeability, and stability.

84 Successive loads of material shall be dumped on the embankment so as to produce the best practicable distribution of the material, subject to the approval of the contracting officer, and for this purpose the contracting officer may direct the points in the embankment where the individual loads shall be deposited, to the end that the finer material shall be placed in the central upstream portion of the earth-fill, including the cut-off

trench, and the sand and gravel content in the earth fill will be gradually increased toward the upstream and downstream slopes of the earth-fill. No stones having maximum dimensions of more than five inches shall be placed in the earth-fill portion of the embankment. Should stones of such size be found in otherwise approved earth-fill embankment materials, they shall be removed by the contractor either at the site of excavation or after transporting to the embankment, but prior to rolling and compacting the materials in the embankment. Such stones shall be placed in the cobble-fill portion of the embankment as approved by the contracting officer. The mixture of clay, sand, and gravel shall be placed in the earth embankment in continuous, approximately horizontal layers not more than six inches in thickness after rolling as herein specified. If, in the opinion of the contracting officer, the surface of the prepared foundation or the rolled surface of any layer of the earth fill is too dry or smooth to bond properly with the layer of material to be placed thereon, it shall be moistened and/or scarified to the satisfaction of the contracting officer before the next succeeding layer of earth-fill material is placed. The earth fill on each side of the cut-off walls shall be kept at approximately the same level as the placing of the earth fill progresses; and the walls shall be carefully protected against displacement or other damage. The upstream slope of the earth fill shall be thoroughly compacted, reasonably true to line and grade, and all projections of more than six inches outside of the neat lines of the earth fill shall be removed at the contractor's expense before the riprap is placed. The upper

12 inches of the crest of the dam embankment shall be constructed of selected gravelly material or selected fine rock material satisfactory to the contracting officer and shall be finished on top so as to be suitable for a roadway, as directed by the contracting officer.

(d) *Moisture control.*—Prior to and during rolling the material in each layer of the earth fill shall have the optimum practicable moisture content required for compaction purposes, as determined by the contracting officer, and the moisture content shall be uniform throughout the layer. Insofar as practicable, as determined by the contracting officer, the application of water to the material for this purpose shall be at the site of excavation, and shall be supplemented as required by sprinkling in place on the embankment, if necessary. Harrowing or other working of the material may be required to produce the required uniformity of water content.

(e) *Rollers.*—Tamping rollers having staggered ball feet or knobs uniformly spaced to provide approximately one knob for each square foot of the area measured in a cylindrical surface passing through the faces of the knobs, and equipped with suitable cleaners shall be used for compacting the embankments. The bearing area

of each foot or knob shall be not less than six square inches, and the foot or knob shall extend radially beyond the drum of the roller not less than seven inches. The unit pressure on the knobs, computed by dividing total weight of each roller, in pounds, when operating by the total bearing area, in square inches, of the maximum number of feet or knobs in one row parallel to the axis of the roller, shall not be less than 340 pounds per square inch: *Provided*, That not less than one knob for each foot of length of drum shall be used in computing the unit pressure on the knobs. Each drum shall be free to pivot about an axis parallel to the direction of travel. The design, loading, and operation of the rollers shall be subject to the approval of the contracting officer.

86 (f) *Rolling*.—When each layer of material has been conditioned to have the optimum practical moisture content required for compaction purposes, as provided in subparagraph (d), it shall be compacted by passing the tamping roller, as specified above, over it 12 times. If the moisture content is greater or less than the optimum for compaction, the rolling shall not proceed except with the specific approval of the contracting officer, and, in that event, additional rolling shall be done, as directed by the contracting officer, to obtain the required compaction, and no adjustment in price will be made therefor. If, with the optimum moisture content, it is found desirable to roll each six-inch layer more or less than 12 times to obtain the desired compaction, the number of rollings shall be changed accordingly, as directed by the contracting officer, and adjustment will be made in the unit price bid for compacted embankments in the amount of 25/100 cents per cubic yard for each additional or lesser number of rollings required.

(g) *Tamping*.—Portions of the earth-fill between rock projections on the dam abutments, near cut-off walls and other concrete structures, and elsewhere, which in the opinion of the contracting officer cannot be compacted properly by the use of rolling equipment shall be thoroughly compacted by the use of mechanical tampers. The area surrounding the outlet conduit to a thickness of five feet shall be compacted by mechanical-tamping methods or by other methods which in the opinion of the contracting officer will not injure the concrete outlet conduit. The degree of compaction for such portions of the earth fill described above shall be equivalent to that obtained by moistening and rolling as specified for other portions of the earth fill.

(h) *Payment*.—The cost of all work required for the completion of the earth-fill portions of the embankments as described in this paragraph, except the excavation and transportation of the materials required for the earth fill, shall be included in the unit price bid in the schedule for earth fill in embankments.

87 56. *Cobble and sluiced gravel fill at downstream toe of embankment.*—A cobble fill sluiced with sand and gravel shall be constructed at the downstream toe of the embankment as shown on the drawings or as directed by the contracting officer. The fill shall consist of a free-draining mixture of cobbles, gravel, and sand from required excavation or from borrow pits. The cobbles used shall not exceed one cubic yard in volume and the gravel used shall not be larger than $2\frac{1}{2}$ inches in diameter. The fine materials used in the fill shall be selected as directed by the contracting officer, for gradation and freedom from silt and clay. The larger cobbles shall be placed near the downstream edge of the fill. The cobbles shall be placed in approximately horizontal layers not exceeding three feet in thickness, and as the placing of each layer of cobbles progresses, the sand and gravel shall be sluiced into the voids in the cobble fill by a stream of water having sufficient force to move the material into place and completely fill the voids. Measurement, for payment, of the cobble and sluiced gravel fill at the downstream toe of the dam will be made only to the lines and grades shown on the drawings or established by the contracting officer. Payment for the cobble and sluiced gravel fill at downstream toe of embankment will be made at the unit price per cubic yard bid therefor in the schedule, which unit price shall include the cost of selecting and placing the materials, furnishing the water and sluicing the sand and gravel into the voids, and of all other operations, except the excavation, separation, and transportation of the materials required for the completion of the fill as described in this paragraph.

88 57. *Cobble and rock fills on slopes of embankment.*—The cobble and rock fills on the downstream slope of the dam embankment and on the upstream slope of the dam embankment at the inlet to the spillway channel shall be constructed to the lines and grades shown on the drawings or established by the contracting officer. The cobble and rock fills shall consist of cobbles over $2\frac{1}{2}$ inches in diameter separated from required excavation and from materials excavated from cobble borrow pits as provided in paragraph 51. The rock fill shall consist of a suitable free-draining mixture of rock fragments from required rock excavation. The largest rock or cobbles in the fills shall be not more than one cubic yard in volume. The inclusion of gravel or rock spalls in the rock fill in an amount not in excess of that required to fill the voids in the coarser material, as determined by the contracting officer, will be permitted. Successive loads of material shall be dumped so as to secure the best practicable distribution of the materials as determined by the contracting officer. The cobble and rock fills shall be placed in approximately horizontal layers not exceeding three feet in thickness. The materials in the fills need not be hand-placed or especially compacted, but shall be dumped and the dumped

piles shall be roughly leveled, in a manner satisfactory to the contracting officer, so as to maintain a reasonably uniform surface and insure that the completed fills will be stable and that there will be no large unfilled spaces within the fills. Payment for cobble and rock fills on the slopes of the embankment will be made at the unit price bid therefor in the schedule, which unit price shall include the cost of selecting and placing the rock and cobbles, and of all other operations, except the excavation and transportation of the materials, required for the completion of the cobble and rock fills as described in this paragraph.

58. *Riprap on upstream slope of embankment and in inlet channel to spillway.*—The upstream slope of the dam embankment above the berm at elevation 7580 and the side slope of the inlet channel to the spillway shall be covered with a layer of rock riprap three feet in thickness. The rock riprap shall consist of hard, dense, and durable rock obtained from the rock borrow pit as described in paragraph 52. The largest rock in the riprap shall be not more than one-half of a cubic yard in volume, and the average volume of the pieces shall be not less than one cubic foot. The inclusion of objectionable quantities, as determined by the contracting officer, of loose dirt, sand, and rock dust will not be permitted. The rock in riprap need not be compacted but shall be dumped and graded off in such a manner as to insure that the larger rocks are uniformly distributed and the smaller rock fragments and spalls serve to fill the spaces between the larger rocks and in such a manner as will result in a reasonably smooth surface and a uniform layer of riprap of the thickness specified. Hand-placing will be required only to the extent necessary to secure the results specified above. Riprap will be measured for payment to the neat lines shown on the drawings or established by the contracting officer. Payment for riprap on the upstream slope of the embankment and in the inlet channel to the spillway will be made at the unit price per cubic yard bid therefor in the schedule, which unit price shall include the cost of selecting and placing the required materials and of all other operations, except the excavation and transportation of the materials, required for the completion of the riprap as described in this paragraph.

59. *Dumped riprap in outlets of spillway and diversion channels.*—The contractor shall place dumped riprap for the protection of the outlets of the spillway and diversion channels, as shown on the drawings or as directed by the contracting officer. The rock used shall be hard, dense, and durable rock obtained from the rock borrow pit as described in paragraph 52, or from the river channel or vicinity upstream from the outlet of the spillway channel. The volume of the pieces of the riprap in the spillway channel shall grade uniformly from approximately one cubic yard down to not less than one cubic foot. The volume of the pieces of the riprap

in the diversion channel shall grade uniformly from approximately one cubic yard down to not less than two cubic feet. The inclusion of gravel and rock spalls in the mass in an amount not in excess of that required to fill the voids in the rock as above specified, as determined by the contracting officer, will be permitted.

90 The rock in the riprap need not be hand-placed but shall be dumped and leveled off so as to conform roughly to the established lines and so that there will be no unreasonably large unfilled spaces within the riprap. Payment for dumped riprap in outlets of spillway and diversion channels will be made at the unit price per cubic yard bid therefor in the schedule, which unit price shall include the entire cost of selecting and placing the materials and of all other operations, except the excavation and transportation of the materials, required for the completion of the riprap as described in this paragraph.

DRAINAGE

60. *Drainage, general.*—Drains shall be constructed under the downstream toe of the dam, under the floor of the spillway, under the floor of the outlet channel, and elsewhere, as shown on the drawings or as directed by the contracting officer. A layer of porous concrete shall be placed under the floor of the spillway-gate structure, as shown on the drawings or as directed by the contracting officer and as described in paragraph 62. All pipe drains, except the four-inch diameter cast-iron pipe drain embedded in the concrete of the gate chamber and the 6-inch diameter metal pipe drain from the float well in the spillway-gate structure, shall be constructed of sewer pipe laid with open joints and embedded in trenches filled with screened gravel, as described in paragraph 61. The 4-inch diameter cast-iron pipe drain embedded in the concrete of the gate chamber to provide drainage from the gutter around the edge of the floor of the gate chamber shall be installed as described in paragraph 109. Payment for installing the 6-inch-diameter metal-pipe drain from the float well in the spillway-gate structure will be made at the unit price per pound bid in the schedule for installing radial-gate hoists and operating and control mechanisms. Care shall be taken to avoid clogging the drains during the progress of the work, and should any drain be-
91 come clogged from any cause before final acceptance of the work it shall be cleaned out in a manner satisfactory to the contracting officer or replaced by and at the expense of the contractor.

61. *Constructing sewer-pipe drains.*—Concrete or clay sewerpipe varying from 4 to 12 inches in diameter shall be laid with uncemented joints in the toe-drain trenches at the downstream toe of the dam embankment and in the drain-pipe trenches under the floor

of the spillway, and under the floor of the outlet channel, as shown on the drawings or as directed by the contracting officer. All sewer pipe and heavy burlap for covering the gravel bedding will be furnished to the contractor by the Government as provided in paragraph 25. All other materials required for the construction of the drains, including the gravel for bedding, shall be furnished by the contractor. In handling sewer pipe, care shall be used to avoid breakage, and the contractor will be charged for all sewer pipe in excess of one percent of the total amount of each size of pipe delivered to the contractor that is damaged in handling to such an extent that, in the judgment of the contracting officer, it is unfit for use. Gravel bedding of the thickness shown on the drawings or as directed by the contracting officer shall be placed in the bottom of the pipe trenches. The pipe shall be carefully laid on the gravel bedding with the bell end upgrade and with partially open, uncemented joints, in a workmanlike manner, and to the lines and grades established by the contracting officer. Gravel shall be carefully placed and tamped about the pipe so as not to disturb the pipe after being laid and to hold it securely in position while the embankment or concrete is being placed. The gravel shall be clean and well graded from $\frac{3}{4}$ inch to $1\frac{1}{2}$ inches in size. The entire trench outside of the drain pipe shall be filled with gravel to the bottom or outside surface of the concrete. Rock fill shall not be dumped directly on the gravel but shall be carefully worked into place until a sufficient depth is placed to prevent breakage of the pipe as determined by the contracting officer. *Provided*, That for drains under the downstream toe of the dam embankment, the contractor will be required to place only such quantity of gravel as may be required to provide a minimum thickness of six inches over the top and at the sides of the pipe. Where concrete is to be placed over or against the gravel about drain pipes, the gravel fill shall be covered with heavy burlap to prevent mortar from the concrete from entering the gravel-fill about the pipe. Measurement for payment for constructing the sewer-pipe drains will be made along the center lines of the pipe, from end to end of the pipe in place, and no allowance will be made for lap at joints. Payment for constructing sewer-pipe drains will be made at the unit prices per linear foot bid therefor in the schedule, which unit prices shall include the cost of unloading, hauling, storing, handling, preparing an even bedding, and placing the pipe; furnishing, hauling, handling, and placing the gravel fill about the pipe; placing burlap covering, where required; and of all other operations except the excavation of the trenches, required for the completion of the drains. Measurements, for payment, of excavation for trenches for pipe drains under the floor of the spillway and under the floor of the outlet channel will be made only to the neat lines required to provide for the thickness of gravel fill around the drain

pipe as shown on the drawings or as directed by the contracting officer, and payment for excavation of the trenches will be made at the unit prices per cubic yard bid in the schedule for excavation for structures. Measurement of excavation for the embankment toe drains and payment therefore will be made as provided in paragraph 48.

62. *Porous concrete.*—Porous concrete shall be placed over the foundation of a portion of the spillway-gate structure, and elsewhere if required, as shown on the drawings or as directed by the contracting officer. Cement for the porous concrete will be furnished by the Government as provided in paragraph 25. All

93 other materials shall be furnished by the contractor. The porous concrete shall be mixed in the proportion of one part of portland cement to five and one-half parts of aggregate, by weight. The aggregate shall conform to the provisions of paragraph 73, except that all of the aggregate shall pass a screen having $\frac{3}{4}$ -inch square or equivalent round openings and shall be retained on a screen having $\frac{3}{16}$ -inch square or equivalent round openings. The amount of water used in the concrete shall be such (a water-cement ratio of 0.33 plus or minus, by weight) that the resulting cement paste will not fill the voids of the aggregate but will thoroughly coat and bind the aggregate particles. The compressive strength of the porous concrete at seven days, as determined by tests of 6-by-12-inch cylinders made and tested in accordance with the latest standard specifications of the American Society for Testing Materials, shall be not less than 1,000 pounds per square inch. The porosity of the concrete shall be such that water will pass through a slab of the concrete 12 inches thick at the rate of not less than 10 gallons per minute per square foot of slab, with a constant 4-inch depth of water on the slab. The surface of the porous concrete shall be finished to the neat lines of the under side of the concrete structure. Immediately before concrete is placed upon or against porous concrete, the entire surface of contact between the porous concrete, and the concrete of the structure shall be moistened and covered with a layer one-half of an inch thick, of stiff mortar, as provided in paragraph 78, to prevent fresh mortar from the concrete from entering the porous concrete. Measurement, for payment, of porous concrete will be made to the neat lines of the finished surface of the porous concrete and to the thickness shown on the drawings or directed by the contracting officer. Payment for porous concrete will be made at the unit price per cubic yard bid therefor in the schedule, which unit price shall include the cost of furnishing all materials, except cement, and of mixing and placing the porous concrete as described in this paragraph.

94 63. *Drilling weep holes.*—Weep holes shall be drilled through the floor of the trash-rack structure and elsewhere

as shown on the drawings or directed by the contracting officer. All weep holes shall be drilled after the concrete has been placed, shall have a diameter of not less than $1\frac{1}{2}$ inches, and shall be drilled through the concrete and into the rock to such depths as may be directed by the contracting officer. Weep holes will be measured for payment after the holes are drilled, and only the length of the holes actually drilled by direction of the contracting officer will be considered in making measurements. Payment for drilling weep holes will be made at the unit price per linear foot bid therefor in the schedule.

95-96 GENERAL TRAVERSE.—Filed March 26, 1945.

And now comes the ATTORNEY GENERAL, on behalf of the United States, and answering the petition of the claimant herein, denies each and every allegation therein contained; and asks judgment that the petition be dismissed.

(S.) FRANCIS M. SHEA,

Assistant Attorney General.

J.S.

N.A.C.

E.E.E.

ARGUMENT AND SUBMISSION OF CASE

On April 4, 1950, the case was argued and submitted on merits by Mr. Harry D. Ruddiman for plaintiffs and by Mr. James J. Sweeney for defendant.

97 **Special Findings of Fact, Conclusion of Law and Opinion of the Court by Madden, Judge—Filed June 5, 1950**

Mr. Harry D. Ruddiman for the plaintiff. King & King were on the briefs.

Mr. James J. Sweeney, with whom was Mr. Assistant Attorney General H. G. Morison, for the defendant.

This case having been heard by the Court of Claims, the court, upon the evidence and the report of a commissioner, makes the following

SPECIAL FINDINGS OF FACT

GENERAL

1. The plaintiffs are citizens of the United States and are the members of a partnership "Martin Wunderlich Company," herein-

after referred to as plaintiff, which is engaged in the construction business with its home office in Jefferson City, Missouri.

2. On March 14, 1938, pursuant to open bidding, the Martin Wunderlich Company entered into contract No. 12R-8413, with the United States represented by S. O. Harper, Acting Chief Engineer, Bureau of Reclamation, Denver, Colorado, as contracting officer, to furnish materials and perform all work for the construction of the Vallecito Dam, in accordance with the specifications, schedules, drawings, and supplemental notices to bidders dated November 10 and 29, 1937, for an estimated consideration of \$2,115,870.00. Certain materials were to be furnished by the United States Government as specified under Paragraph 25 of the Specifications. The contract, specifications, and drawings are in evidence as Plaintiff's Exhibit A and as Defendant's Exhibit F, and are made a part hereof by reference.

3. The contractor was required to begin work within 30 days after receipt of notice to proceed and to complete the work within 1,350 days thereafter. Notice to proceed was received on April 18, 1938, thereby fixing the completion date as December 18, 1941. The contract work was satisfactorily completed in October, 1941, in advance of the final completion date. Plaintiff was paid the net sum of \$2,220,965.30 for the contract performance, including extra work orders in the value of \$64,014.30, and after sundry deductions for materials, damages, etc., of \$6,135.92.

4. The Vallecito Dam is located about 15 miles north of Bayfield, in the southern part of Colorado, on the Pine River just below the confluence of the Pine River and the Vallecito Creek. It was to be built for irrigation purposes and to serve the farmers in the locality. The Dam site had an elevation of approximately 7,550 feet.

The reservoir to be created by the Vallecito Dam covered about 129,000 acre-feet of water.

5. The main feature of the contract work was the rolled earth-filled dam. The crest length of the dam is about 4,000 feet and its maximum height is 7,673 feet elevation, or 125 feet above the bed of the stream. The base is about 600 feet wide at its widest portion and the crest is uniformly 35 feet wide. The upstream slope is 3 to 1 and the downstream slope is 2 to 1 at the upper portion, breaking into a 4 to 1 slope and finally tapering off into a long comparatively flat section on a 10 to 1 slope.

The main dam embankment includes the earth-filled portion of the dam, the cobble-slued gravel at the downstream toe of the dam the cobble and rock fills on the slopes of the dam and the rock riprap on the upstream face.

6. The embankment proper consists of three zones; that is, Zone No. 1 at the upstream side which is constructed of selected stable material grading to gravel at the upstream slopes; Zone No. 2, or the Central Zone, which is constructed of

"impervious material" and Zone No. 3 which is constructed of a semi-impervious material grading to gravel at the downstream slope. The face of the upstream slope is covered with 3 feet of rock riprap and the face of the downstream slope is covered with cobbles.

7. The other features of the work were (1) the outlet conduit, a twin-barreled concrete structure through the embankment in the vicinity of the right abutment through which the flow of water from the reservoir was controlled by gates; (2) the outlet channel, lined with concrete, and extending 200 feet from the downstream end of the outlet conduit to a point where the outlet channel emptied into the spillway channel; (3) the spillway channel, a concrete-lined structure beginning at a point higher up on the right abutment, extending downstream 2,800 feet and through which the flow of flood water from the reservoir was controlled by means of gates at the upstream end; (4) the stilling basin, a concrete structure at the downstream end of the spillway channel through which the water flowing from the spillway channel and outlet channel passed before discharging into the river; and (5) a cut-off trench under the impervious section of the dam, backfilled with impervious materials, and also containing a concrete cut-off wall at each abutment.

The control house is located on the crest of the dam above the outlet channel and in this house are located the controls of the gates in the outlet conduit.

8. The earth-filled portion of the embankment consists of a mixture of clay, sand, and gravel obtained from the excavations for required structures and from borrow pits in the vicinity. Such materials were to be spread upon the embankment in not more than six-inch lifts after compaction, brought to optimum moisture content either by drying or sprinkling as necessary, and compacted by 12 passages of a tamping roller.

Earth borrow pit areas were shown on the contract drawings, located on the right and left banks of the Pine River facing downstream in the reservoir basin above the dam.

The area on the right of the river was later designated as Borrow Pit No. 1 and that on the left as Borrow Pit No. 2

100 9. Martin Wunderlich, plaintiff's general manager, visited the site of the work two different times prior to the opening of bids. He stated that on his second visit he was accompanied by George Leonard, as Assistant Superintendent; and that they were shown over the site by Charles A. Burns, an employee of the defendant, who later became the defendant's construction engineer for the contract. Mr. Wunderlich further stated that Mr. Burns pointed out to them on the ground the location of the earth borrow pit area on the right of the river, and that they inquired of him whether such area included lower ground between such point and the River, to

which inquiry Mr. Burns replied that it did not and that plaintiff would not be required to obtain borrow material from such low area. Mr. Burns testified and denied not only making such statement but denied having accompanied Mr. Wunderlich on such inspection tour and further denied ever having seen Mr. Leonard prior to the signing of the contract. It seems probable that the said Mr. Wunderlich did address to some employee of the defendant upon the occasion in question; an inquiry as to the limits of Earth Borrow Area No. 1, and that he may have received a reply to the effect that at that time it was not anticipated that there would be need to obtain borrow in the low areas. It is unreasonable however, to conclude that any employee of the defendant at that time would have stated unequivocally that no such need would arise.

Plaintiff's organization at the site was under the direction of its construction superintendent F. H. Stewart, under him as foremen were John New and Floyd Helm.

Mr. Wunderlich visited the job at intervals, coming over for one- to three-day periods. George P. Leonard was plaintiff's assistant and general superintendent. He visited the job only two or three times during the entire performance period of work. Theodore Wunderlich, the brother of Martin Wunderlich, came on the job the summer of 1939; as foreman of the dragline; later he accompanied defendant's field inspector and took notes.

10. The defendant's contracting officer, as stated above, was S. O. Harper, who was acting chief engineer, and later Chief Engineer, Bureau of Reclamation, and was stationed at Denver, Colorado. As field representative of the contracting officer, Charles A. Burns was the construction engineer and had under his charge at the site an organization consisting of a chief clerk, a field engineer, an office engineer, a resident engineer, laboratory aides and a field inspector.

J. R. Walton was the field engineer and earth-work inspector of the defendant. During the progress of the work he was in constant contact with plaintiff's representatives and consulted with them almost daily. The relationship between plaintiff's employees at the site and defendant's field force was at all times cordial and co-operative.

11. Operations began in May 1938 on the right side of the river as that seemed to be the feasible plan of operation. The first work consisted of building the camp and clearing and stripping the site of the dam foundation and spillway areas. Then the contractor began excavating the cut-off trench, outlet conduit and diversion channel. A large sand pocket, encountered in the area of the diversion channel, was wasted. Substantially all stripping in the construction area had been completed in 1938. Excavation of the di-

version channel was completed and the river was diverted about the end of September 1938. Excavation progressed in the spillway and cut-off trench and part of the concrete cut-off wall had been constructed. Approximately 730,000 cubic yards of embankment had been placed in 1938. Operations were shut down because of the severe weather in December of that year. In the following year, operations began in April 1939 and continued until December when unfavorable weather again caused the work to be shut down. In 1940 the work was resumed in the spring and continued until November 1940. At that time the larger portion of the earth work had been completed and the major portion of the contractor's equipment was moved off the job site at the close of the season.

In the year 1941 considerable concrete work was finished, operating machinery was installed, and the top course of the embankment was completed.

102 12. The contract provided in part as follows:

ARTICLE 3. *Changes.*—The contracting officer may at any time, by a written order, and without notice to the sureties, make changes in the drawings and/or specifications of this contract and within the general scope thereof. If such changes cause an increase or decrease in the amount due under this contract, or in the time required for its performance, an equitable adjustment shall be made and the contract shall be modified in writing accordingly. No change involving an estimated increase or decrease of more than Five Hundred Dollars shall be ordered unless approved in writing by the head of the department or his duly authorized representative. Any claim for adjustment under this article must be asserted within 10 days from the date the change is ordered. *Provided, however,* That the contracting officer, if he determines that the facts justify such action, may receive and consider, and with the approval of the head of the department or his duly authorized representative, adjust any such claim asserted at any time prior to the date of final settlement of the contract. If the parties fail to agree upon the adjustment to be made the dispute shall be determined as provided in article 15 hereof. But nothing provided in this article shall excuse the contractor from proceeding with the prosecution of the work so changed.

ARTICLE 4. *Changed conditions.*—Should the contractor encounter, or the Government discover, during the progress of the work subsurface and/or latent conditions at the site materially differing from those shown on the drawings or indicated in the specifications, or unknown conditions of an unusual nature differing materially from those ordinarily encountered and generally recognized as inhering in the work of the character provided for in the plans and specifications,

the attention of the contracting officer shall be called immediately to such conditions before they are disturbed. The contracting officer shall thereupon promptly investigate the conditions, and if he finds that they do so materially differ the contract shall, with the written approval of the head of the department or his duly authorized representative, be modified to provide for any increase or decrease of cost and/or difference in time resulting from such conditions.

ARTICLE 5. *Extras*.—Except as otherwise herein provided, no charge for any extra work or material will be allowed unless the same has been ordered in writing by the contracting officer and the price stated in such order.

ARTICLE 13. *Disputes*.—Except as otherwise specifically provided in this contract, all disputes concerning question of fact arising under this contract shall be decided by the contracting officer subject to written appeal by the contractor within 30 days to the head of the department concerned or his duly authorized representative, whose decision shall be final and conclusive upon the parties thereto. In the meantime the contractor shall diligently proceed with the work as directed.

ARTICLE 21. *Definitions*.—(a). The term "head of the department" as used herein shall mean the head or any assistant head of the executive department or independent establishment involved, and the term "his duly authorized representative" shall mean any person authorized to act for him.

(b) The term "contracting officer" as used herein shall include his duly appointed successor or his authorized representative.

13. Scheduled prices, made a part of the specifications (spec. 705), are listed for 59 items of work. Of these items 1, 46 and 47 are lump-sum prices; all of the other items are unit prices for designated items of work. The ultimate price paid under the contract as determined by work actually performed was \$2,220,965.30 including extra Work Orders 1 to 8 and Change Orders 1 to 6.

14. The specifications provide in part as follows:

5. *Quantities and unit prices*.—The quantities noted in the schedule are approximations for comparing bids; and no claim shall be made against the Government for excess or deficiency therein, actual or relative. Payment at the prices agreed upon will be in full for the completed work and will cover materials,

supplies, labor, tools, machinery, and all other expenditures incident to satisfactory compliance with the contract, unless otherwise specifically provided.

6. *Staking out work.* The work to be done will be staked out for the contractor who shall, without cost to the Government, provide such material and give such assistance as may be required by the contracting officer.

104 10. *Extras.*—The contractor shall, when ordered in writing by the contracting officer, perform extra work and furnish extra material, not covered by the specifications or included in the schedule, but forming an inseparable part of the work contracted for. Extra work and material will ordinarily be paid for at a lump sum or unit price agreed upon by the contractor and the contracting officer and stated in the order. Whenever in the judgment of the contracting officer it is impracticable because of the nature of the work or for any other reason to fix the price in the order, the extra work and material shall be paid for at actual necessary cost as determined by the contracting officer, plus 10 percent for superintendence, general expense, and profit. The actual necessary cost will include all expenditures for material, labor (including compensation insurance), and supplies furnished by the contractor, and a reasonable allowance for the use of his plant and equipment, where required, to be agreed upon in writing before the work is begun, but will in no case include any allowance for office expenses, general superintendence, or other general expenses.

14. *Protests.*—If the contractor considers any work demanded of him to be outside the requirements of the contract, or considers any record or ruling of the contracting officer or of the inspectors to be unfair, he shall immediately upon such work being demanded or such record or ruling being made, ask for written instructions or decision, whereupon he shall proceed without delay to perform the work or to conform to the record or ruling, and, within 10 days after date of receipt of the written instructions or decision, he shall file a written protest with the contracting officer, stating clearly and in detail the basis of his objections. Except for such protests or objections as are made of record in the manner herein specified and within the time limit stated, the records, rulings, instructions, or decisions of the contracting officer shall be final and conclusive.

Instructions and/or decisions of the contracting officer contained in letters transmitting drawings to the contractor shall be considered as written instructions or decisions subject to protest or objections as herein provided.

20. *Description.* * * * The dam will consist of a moistened and rolled embankment of clay, sand and gravel with a 3-foot blanket of rock riprap on the upstream face and a cobble and rock fill of increasing thickness from crest to toe on the downstream slope. * * *

21. *Drawings.*—The following drawings are made part of these specifications:

1. (28646) 191-D-41—Location map.
2. (28347) 191-D-42—Hydrographs of Pine River.
3. (28648) 191-D-43—Map of reservoir area.
4. (28649) 191-D-44—Location and log of drill holes and test pits.
5. (28650) 191-D-45—Borrow pit and test-hole data.
6. (28651) 191-D-46—General plan and sections.
7. (28652) 191-D-47—River diversion—Plan, profiles, and sections.
8. (28653) 191-D-48—River diversion—Log drop details.
9. (28654) 191-D-49—Spillway—Plan and sections.
10. (28655) 191-D-50—Spillway—Gate structure details.
11. (28656) 191-D-51—Spillway—Stilling basin details.
12. (29334) 191-D-52—Spillway—37-foot by 19-foot automatic radial gate—Installation.
13. (29335) 191-D-53—Outlet works—Conduit alignment, profile and sections.
14. (29336) 191-D-54—Outlet Works—Gate chamber and control house.
15. (29337) 191-D-55—Outlet works—Inlet and outlet structures.
16. (28218) 40-D-2323—5-foot by 5-foot high-pressure gate—Assembly with hydraulic hoist.
17. (293-8) 191-D-57—Electrical installation (sheet 1 of 2).
18. (29339) 191-D-58—Electrical installation (sheet 2 of 2).
19. (29340) 191-D-59—Construction program.

The drawings which form a part of these specifications show the work as definitely and in as much detail as is possible at the present state of development of the design. The attached drawings will be supplemented or superseded by such additional and detail drawings as may be necessary or desirable as the work

progresses. Such drawings, which will show details not shown on the attached drawings, for all features of the work and for the installation of machinery or equipment not yet purchased, will not be considered to involve changes or extras within the meaning of articles 3 and 5 of the contract and paragraph 10 of these specifications. The contractor will be required to perform the work on these features, and in accordance with 106 the additional and detail drawings mentioned above, at the applicable unit prices bid in the schedule for such work or work of a similar nature, as determined by the contracting officer. The contractor will be furnished such additional copies of the specifications and drawings as may be required for carrying out the work. Contact prints of the original drawings from which the attached reductions were made will be furnished to the contractor for construction purposes, upon request.

25. *Materials furnished by the Government.*—The Government will furnish cement for use in concrete, mortar, and grout; * * * concrete or clay sewer pipe for drains; * * * heavy burlap for use over drains; * * * and also all other materials not specifically mentioned in this paragraph or in paragraph 26 that will become a part of the completed construction work. * * *

28. *Records of test pits and borings.*—The drawings included in these specifications show the available records of test pits dug and borings made at or near the dam site. The Government does not guarantee any interpretation of these records or the correctness of any information shown on the drawings relative to geological conditions. Bidders and the contractor must assume all responsibility for deductions and conclusions as to the nature of the rock and other materials to be excavated, the difficulties of making and maintaining the required excavations and of doing other work affected by the geology of the site of the work, and for the final preparation of the foundations for the dam and other structures.

30. *Right to change location and plans.*—When additional information regarding foundation or other conditions becomes available as a result of the excavation work, further testing, or otherwise, it may be found desirable to change the location,

alignment, dimensions, or design of the dam or appurtenant works to conform to such conditions. The Government reserves the right to make such reasonable changes as, in the opinion of the contracting officer, may be considered necessary or desirable, and the contractor shall be entitled to no extra compensation because of such changes, except that any increase in the amount of excavation, concrete, or other required work,

for which items are provided in the schedule, will be paid for at the unit prices bid therefor in the schedule.

107 The contractor's plant shall be laid out and his operations shall be conducted so as to accommodate any reasonable change in the location and design of the dam and appurtenant works, or any part thereof, without additional cost to the Government.

15. During the progress of the work numerous conferences and conversations were carried on by plaintiff's superintendent (Stewart) with either Mr. Burns, the construction engineer, or Mr. Walton, the field engineer of the defendant. At times, Mr. Stewart would contend that work he was directed to do by one or the other of defendant's representatives was extra work and not covered by contract requirements. On some of these occasions he would request written instructions from the defendant for the performance of such work. It was the custom of the defendant's representatives on such occasions to point out to Mr. Stewart the provisions of the contract or specifications under which, in their opinion, the work in question was required. If the work in question was, in their opinion, covered by the contract and specifications, they told Mr. Stewart that written instructions were unnecessary and declined to issue them. On many occasions Mr. Stewart would thereupon proceed with the performance of the work without making a formal written protest, on his avowed understanding that written protest could not be made until he had received written instructions.

Where defendant's representatives considered work to be outside of or a change in the contract requirements, written instructions to the contractor were issued.

16. In connection with certain claims plaintiff used a schedule of equipment rental rates, which it says was agreed to by the construction engineer, Charles A. Burns. Said Burns had no authority to enter into an agreement with the plaintiff as to equipment rental rates and under the weight of the evidence no such agreement was entered into. The Bureau of Reclamation maintained a schedule of equipment generally required in construction work, with bases for computing rental values. The annual rental rates suggested in the schedule of the Associated General Contractors were adopted

108 by the Bureau of Reclamation in preparing its equipment rental tables. This schedule is adequate for a determination of rental values on any equipment used by plaintiff on this job.

17. On January 15, 1940, the contractor made written claim to the contracting officer on 23 items. These claims were forwarded to the construction engineer for a statement of facts and recommendations. Following conversations of January 25 and 27, 1940, the contractor submitted to the construction engineer further detailed information regarding such claims.

Subsequently many additional conferences were had between the parties either at the job site or in the contracting officer's headquarters at Denver, at which conferences the contractor was given an opportunity to present any facts and arguments desired.

18. On February 16, 1942, the contractor advised the contracting officer that it would not accept the final estimate voucher of \$123,044.74 nor allowances under orders for changes No. 3, 4, and 5, amounting to \$51,283.85, or a total of \$174,328.59, as final settlement for the work.

Later the contractor did accept the final voucher estimate and executed a final release but reserved and excepted therefrom 42 claims aggregating \$463,547.47, and a 43rd item claiming interest thereon.

19. On March 13, 1942, the contractor forwarded to the contracting officer the final voucher, signed and accompanied by a release dated March 14, 1942, reserving specific claims numbered from 1 to 43, inclusive, with certain omissions. Omitted from the said claims were those numbered 12, 15, 16, 19, 22, 24, 25, 26, 29, and 30. These claims had been abandoned. Claim No. 43 reserved in the release was for interest and this claim has also been abandoned.

20. On July 11, 1942, Walker R. Young, acting Chief Engineer, and contracting officer, advised the contractor by letter that it had not submitted supporting data relating to claims 36 to 42. Such data was submitted by the contractor under date of July 25, 1942.

Thereafter numerous conferences were had between the parties at which times various matters involved in the claims were discussed.

109 21. On December 29, 1942, S. O. Harper, Chief Engineer and contracting officer, made written findings of fact on plaintiff's claims. All of said claims were denied except those numbered 5, 6, 10, 13, 17, 18, 20, and 41. Upon such claims the contracting officer allowed amounts as follows:

No. 5 -----	\$2,450.00
No. 6 and No. 10 -----	159.43
No. 13 -----	4,125.00

No. 17	44,208.85
No. 18	466.40
No. 20	1,279.95
No. 41	500.00
Total	\$53,189.63

The contracting officer did not refuse to consider any item of claim on the ground that the contractor had not made timely protest or objections in conformity with Paragraph 14 under the specifications. All claims were considered on their merits.

As to some, the contracting officer stated: "The contractor failed to make its objections and protests of record in the manner and within the time limits required by the contract."

Claim No. 42 was denied as being vague and unsubstantial.

Pursuant to Article 15 of the contract and within the time therein provided, the contractor appealed to the head of the department from the contracting officer's findings as to all claims except those numbered 5, 13, 18, 28, 38, 39, 41, and 42. On July 7, 1943, the head of the department affirmed the action of the contracting officer.

22. There are for consideration in this case plaintiff's claims numbered 1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 13, 17, 18, 20, 27, 31, 33, 34, 35, 37, and 41. As to claims numbered 5, 13, 18, and 41, the amounts have been approved by the contracting officer and agreed to by the plaintiff, but these amounts have not been paid to the contractor. There is no contest as to these claims. As to claims numbered 6 and 10, 17, and 20, the amounts allowed by the contracting officer are less than those claimed by the contractor, and none of the amounts so allowed by the contracting officer has been paid to the contractor. The claims will be taken up serially.

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CLAIM No. 1

Extra costs alleged to be due for excavating wet material on the right side of the river in extensions of Borrow Pit No. 1.

23. Paragraph 52 of the specifications is as follows:

52. *Borrow pits.*—All materials required for the construction of the dam embankment, for riprap for the spillway and diversion channels, and for backfill, which are not available from required excavations, shall be taken from borrow pits as directed by the contracting officer. The location and extent of all borrow pits shall be as directed by the contracting officer, and the Government reserves the right to change the location of such borrow pits or to locate additional borrow pits as required, but such pits will be located as close as feasible to the work in which the borrowed materials are to be used. The rock for the riprap on the upstream slope of the dam embank-

ment and for the spillway and diversion channels shall be obtained from a rock borrow pit near the existing road and approximately seven miles upstream from the dam site: *Provided*, That at the option of the contractor, the rock for the dumped riprap in the outlets of the spillway and diversion channels may be obtained from the river channel or vicinity upstream from the outlet of the spillway channel. No payment for overhaul will be made for rock materials excavated in the rock borrow pit and used for riprap on the upstream slope of the dam embankment or in the spillway or diversion channels. The limit of free haul for materials excavated from borrow pits for the earth-fill and cobble and sluiced gravel-filled portions of the embankment will be 5,000 feet, and for cobbles excavated from borrow pits for the cobble-fill portion of the embankment will be 2,500 feet. Overhaul of earth-fill, cobble and sluiced gravel-fill, and cobble-fill materials placed on the embankment will be paid for at \$0.002 per cubic yard per 100-foot station. The amount of overhaul in station cubic yards for which payment will be made will be the excess, if any, of the sum of the products of the station haul distance and the number of cubic yards of material excavated from each borrow pit and placed in the embankment, over the sum of the total volume of earth-fill and cobble and sluiced gravel-fill material obtained from borrow pits times the specified free haul distance for earth borrow plus the total volume of cobble-fill material obtained from borrow pits times the specified free haul distance for cobble borrow. The station haul distances will be measured along horizontal straight lines between the centers of gravity of the materials as found in excavation in the borrow pits and the center of gravity of the completed embankment. No progress payment will be made for overhaul but all overhaul earnings under the contract will be included in the final estimate. Borrow-pit areas shall be cleared as provided in paragraph 40. Borrow pits shall be operated so as not to mar the usefulness or appearance of any part of the work of any other property of the Government, and borrow pits and the surfaces of wasted material shall be left in a reasonably smooth and even condition satisfactory to the contracting officer. The area of land between the cobble borrow pit and the river shall be kept in its original state and no improvements or removal of timber will be permitted on this area except with the written permission of the contracting officer. Should any borrow pits be located adjacent to the dam and below the level of the top of the dam, a berm of not less than 100 feet shall be left between the toe of the dam and the edge of the borrow pit, with provision for a side slope

of 4 to 1 to the bottom of the borrow pit. In order to avoid the formation of pools, drainage ditches from borrow pits to the nearest outlets shall be constructed by the contractor, where, in the opinion of the contracting officer, such drainage ditches are necessary. The contractor shall carefully strip the sites of borrow pits, or as much thereof as may be required, of topsoil, sod, loam, and other objectionable matter. The disposal of all materials wasted by stripping shall be subject to the approval of the contracting officer. Measurement for payment for stripping borrow pits will be made in excavation and will include only the stripping in locations and to the depths as directed by the contracting officer. Payment for stripping and disposal of materials wasted by stripping will be made at the unit price per cubic yard bid in the schedule for "Excavation, stripping borrow pits." If materials unsuitable for embankment, riprap, or back-fill purposes are found in borrow pits, such materials shall be left in place or excavated and wasted, as directed by the contracting officer, and payment for excavation and disposal of unsuitable materials excavated and wasted by direction of the contracting officer will be made at the unit price per cubic yard bid in the schedule for "Excavation, stripping borrow pits." The contractor shall separate the cobbles $2\frac{1}{2}$ inches or over in size from the materials.

112 excavated in the cobble borrow pits. The separated cobbles shall be placed in the cobble-fill portion of the embankment, and the undersize material, if suitable, in the opinion of the contracting officer, shall be placed in the earth-fill portion of the embankment. Materials excavated from cobble borrow pits will not be classified for payment. Payment for excavation in borrow pits and transportation to embankment and to spillway and diversion channels will be made at the unit prices per cubic yard bid therefor in the schedule, which unit prices shall include the entire cost of excavating the materials from the borrow pits separating the material excavated from cobble borrow pits, and transporting the materials to the embankment and to the spillway and diversion channels: *Provided*, That all materials from borrow pits actually placed in the embankment, in the spillway and diversion channels, or in backfill will again be included for payment under appropriate items of embankment construction, riprap or backfill. Measurement, for payment, of excavation in borrow pits will be made in excavations only and to the neat lines of excavations made by direction of the contracting officer.

The contract drawing 191-D-45 shows in the reservoir basin above the dam on the right side of Pine River looking downstream an area enclosed in a broken line demoninated "earth embankment borrow pit area." This general area on the right side of the river was later designated "Borrow Pit No. 1."

24. In the early fall of 1939 the main dam embankment had reached the stage where the construction of Zone No. 2 containing impervious material had advanced beyond the construction of Zone No. 1 and Zone No. 3 and it was necessary to bring Zone No. 1 and Zone No. 3 up to the level of Zone No. 2.

At this time the supply of material suitable for Zones No. 1 and No. 3 in the area above described marked "earth embankment pit area" on the right-hand side of the river was largely depleted and it became necessary to obtain the required material from some other source or sources.

By explorations conducted by the defendant with auger holes and test pits, defendant discovered sources of the suitable material on lower ground down near Pine River. Such material to the depth of from 6 to 12 inches was unsuitable as it 113 contained organic matter, debris, etc., so that it was necessary to strip the area in question before the desired material could be obtained. The defendant did not desire to incur the expense of such stripping unless this operation could be followed by a production of a substantial quantity of desired material from the area stripped. It was known that the water was near the surface of the ground in the area under consideration and that some of the material would have to be obtained from below the surface of the ground water. From defendant's standpoint such an operation was not objectionable as it would produce material for placement on the dam, having at the time of its excavation a higher moisture content and therefore nearer the optimum moisture content for compaction.

25: In view of the above circumstances, before any stripping of the area in question was undertaken, the defendant's field engineer, J. R. Walton, consulted plaintiff's superintendent, B. H. Stewart, as to the feasibility of the use of the area, pointing out the area to Stewart and asking him to inspect it.

26. As a result of such conferences, it was determined to proceed with borrow operations in the areas in question which are shown upon defendant's Exhibits 1A and 1C and described as Areas A to G, inclusive. The areas were staked out by the defendant and stripped by the plaintiff preliminary to borrow excavation.

27. The access to Area A from the haul road in use by the plaintiff passed over a depressed area of some 300 to 400 feet. To construct the road over this depressed area, plaintiff used material from the stripping operations and later placed thereon some 2,433 cubic yards of gravel.

28. On about September 26 borrow operations were begun by the plaintiff in Area A, using a dragline and Euclid trucks. On this day excavation was attempted of material from a depth of over 2 to 4 feet below the surface of the ground water. This resulted in a very wet condition at the site of excavation from leaking water brought up with the bucket and spilling on the ground from the bucket and the trucks. As the trucks proceeded with their loads over
114 the newly constructed haul road to the fill constructed through the depressed area, water seeping from the wet material in the trucks onto the uncompacted fill soon brought about a very wet condition on the fill which made hauling conditions very difficult and expensive.

29. On the afternoon of September 28 Mr. Wunderlich had come to the job site and, observing operations in Area A and on the access road, ordered the dragline out of this area and back to the main part of Borrow Pit No. 1 at about seven o'clock in the evening.

Two or three days later the dragline was returned to its operations in the lower ground and continued excavation therefrom until about 100,000 cubic yards of borrow from this area had been excavated and hauled to the embankment. The greater part of this yardage was obtained from areas other than Area A, access to which was by a road other than that constructed by the plaintiff as above described. For a time empty trucks returning from the embankment were routed over the fill and succeeded in compacting it so that it could later be used without undue hardship. Operations in Areas A to G, inclusive, were conducted over the period from September 26, 1939, to October 31, 1939.

30. The excavation from Area A on or about September 28, 1939, amounted to 4,960 cubic yards. Due to the circumstances above outlined, these operations were attended with considerable difficulty and expense. The remaining part of the yardage excavated from the low area was accomplished without undue difficulty. Plaintiff had conducted excavation of similar materials during 1938 near the river and at times from the bed of the river without undue difficulty. The difficulties occasioned plaintiff in Claim No. 1 did not result chiefly from the operation of excavation but from the hauling of material from which water seeped over the roads which were not "all weather roads."

31. Plaintiff states that throughout the operations involved in Claim No. 1, it protested orally that the work was beyond contract requirements and requested written orders therefor; and that defendant's construction engineer declined to issue written orders on the ground that the work was within contract requirements and
115 no written orders in such case were contemplated by Paragraph 14 of the specifications. During the progress of the work plaintiff made no written protest nor did it bring to

the attention of the contracting officer, S. O. Harper, its contention that the work exceeded contract requirements and that the construction engineer had declined to issue written instructions.

The operation in Areas A to G was undertaken by the plaintiff in the belief by its Superintendent Stewart that the operation was feasible. No undue difficulty or expense attended the excavation of any of the involved yardage except that excavated from Area A on or about the 28th of September 1939.

32. Plaintiff's actual extra costs under Claim No. 1 are not sufficiently established by the evidence. Plaintiff claims that the construction engineer, Charles A. Burns, agreed at one time to recommend the allowance of \$6,000 on this claim. The construction engineer, as plaintiff knew, was without authority to allow extras and his offer was not based on an analysis of the costs involved.

It was not until December 11, 1939, nearly 2 months after the work was performed, that plaintiff addressed to the contracting officer a written protest and claim for additional cost of work involved in Claim No. 1. This was the contracting officer's first written notification from plaintiff of an objection to the performance of the work.

Claim No. 2

Claim for rehandling stockpile material from cut-off trench

33. In the spring of 1939 the construction of embankment from the diversion channel to the left abutment was lagging behind the section to the right of the diversion channel and the construction engineer directed that the left side of the embankment be brought up to the level of the right-hand side. Before the contractor could place embankment on the left side of the dam it was necessary to excavate and backfill the cut-off trench on that side. A start on this work had been begun the preceding fall.

34. Excavation in the cut-off trench on the left side of the embankment was conducted by plaintiff from April 9 to April 20, 1939. The materials coming from the cut-off trench at this time consisted of glacial till suitable for use in Zone No. 2 of the embankment but contained a quantity of oversized stones. The specifications required that this material be screened and all stones of plus 2½ inch size be removed before the material was placed on the embankment. Previously the construction engineer had relaxed the specification requirements to allow the placing in Zones No. 1 and No. 3 of the embankment material containing oversized stones and the removal of such stones on the embankment by means of a rake dozer. This method was not very satisfactory and was never allowed with respect to the placing of Zone No. 2 material.

35. The separation or screening plant had been located by the contractor on the right abutment at the farther end of the dam.

The previous fall after freezing weather had stopped placement of material on the dam embankment, the contractor, in order to expedite the construction of the spillway, had continued excavation from such area and had stockpiled such material near the screening plant.

36. From April 9 to April 28, 1939, plaintiff's screening plant was out of order and not in operation. In order not to delay further excavation of the cut-out trench on the left side of the diversion channel, it was necessary that the materials therefrom, suitable for inclusion in Zone No. 2 of the embankment, be stockpiled until they could be processed at the screening plant. Because the material from the spillway excavation left no room for further stockpiling at the spillway and possible access thereto during April 1939 from the left side of the embankment was less convenient than it would later become, the contractor asked permission to stockpile such material on the left abutment. A point for this purpose was designated by the construction engineer and is shown marked "Claim No. 2" on Defendant's Exhibit C, Drawing No. 191-D-45. The contractor excavated from the cut-off trench and stockpiled in this area approximately 30,000 cubic yards. This stockpile is shown by photographs, defendant's Exhibit 2C, pages 2, 3, 5, 6, and 7.

37. In the fall of 1939 after the left side of the embankment had been brought up to a point approximately level with the toe of the stockpile, the stockpiled material was hauled across the embankment to the screening plant, processed, and placed in Zone No. 2 of the embankment. This disposition of the stockpile was made intermittently over a period of about 50 days, August 21 to October 10, 1939. Its progress is shown on photographs, defendant's Exhibit 2C, page 7.

38. The contractor was paid for the yardage involved in this claim 35 cents per cubic yard. Under the specifications the price for this item covers excavation, separation or screening, and hauling to the embankment.

39. It is plaintiff's contention that the yardage involved in this claim was ordered stockpiled because at the time of its excavation it was too wet to be placed in the embankment; that such wet condition rendered the material unsuitable for use in the embankment and that it should have been wasted. It therefore claims that the requirement that unsuitable material be rehandled from the stockpile, screened, and hauled to the embankment constituted an extra beyond contract requirements.

40. Paragraph 43 of the specifications reads in part as follows:

43. *Open cut excavation, general.*—Except as otherwise provided in these specifications for definite features of open-cut excavation or as otherwise shown on the drawings, open-cut

excavation will be measured for payment to slopes of 1 to 1 for common excavation and $\frac{1}{4}$ to 1 for rock excavation, and, in the case of excavation for structures, to lateral dimensions of one foot outside of the foundations of the structures: *Provided*, That where the character of the material cut into is such that it can be trimmed to the required lines of the concrete structure and the concrete placed directly against the sides of the excavation, measurement for payment will be made only for the excavation within the neat lines of the structure: *Provided, further*, That for any required excavation where, in the opinion of the contracting officer, the conditions warrant, the excavation will be measured for payment to the most practicable dimensions and lines as staked out or otherwise established by the contracting officer; *Provided, further*, That for trenches for pipe drains, except toe drains for the dam embankment, measurement for payment will be made only to the neat lines required to provide for the thickness of gravel fill around the drain pipes as shown on the drawings or as directed by the contracting officer.

118 Where not to be covered with concrete, excavations shall be made to the full dimensions required and shall be finished to the prescribed lines and grades in a workmanlike manner, except that sharp points of undisturbed ledge rock will be permitted to extend within the prescribed lines not more than six inches. The contractor shall prepare the foundations at structure sites in a manner suitable for forming foundations for the concrete structures. The bottom and side slopes of common excavation upon or against which concrete is to be placed shall be accurately finished by hand to the dimensions shown on the drawings or prescribed by the contracting officer, and the surfaces so prepared shall be moistened with water and tamped or rolled with suitable tools or equipment for the purpose of thoroughly compacting them and forming firm foundations upon or against which to place the concrete structures. If at any point in common excavation, material is excavated beyond the neat lines required to receive the structure, the overexcavation shall be filled with selected materials, in layers not more than six inches thick, moistened and thoroughly compacted by tamping or rolling in a manner satisfactory to the contracting officer. If at any point in common excavation the natural foundation material is disturbed or loosened during the excavation process or otherwise, it shall be consolidated in a manner satisfactory to the contracting officer, or, where directed by the contracting officer, it shall be removed and replaced with selected material compacted to the satisfaction of the contracting officer. Where concrete is to be placed upon or against rock, the excavation shall be sufficient to provide for the minimum thickness

of concrete at all points, and the prescribed average thickness shall be exceeded as little as possible. Measurement of such excavation for payment will be limited to the excavation required for the prescribed average thickness of the concrete for which measurement for payment will be made as provided in these specifications. Any and all excess excavation or over-excavation performed by the contractor for any purpose or reason, except as may be ordered in writing by the contracting officer, and whether or not due to the fault of the contractor, shall be at the expense of the contractor. No blasting that might injure the work will be permitted, and any damage done to the work by blasting, including the shattering of the material beyond the required excavation lines, shall be repaired by and at the expense of the contractor and in a manner satisfactory to the contracting officer. All cavities in

rock excavations upon or against which concrete is to

119 be placed, caused by careless excavation, as determined by the contracting officer, or by removal, as directed by the contracting officer, of rock or other foundation materials needlessly damaged by blasting or other operations of the contractor, shall be solidly filled with concrete entirely at the expense of the contractor, including the cost of all materials required therefor. Insofar as practicable, as determined by the contracting officer, all suitable materials from required excavations shall be used in the embankment or in structure backfill: *Provided*, That all suitable materials from common excavation for the diversion channel, downstream portion of the spillway, outlet works, cut-off trench, toe drains, and from the cobble borrow pits shall be separated into material 2½ inches or more in diameter and material less than 2½ inches in diameter as provided in paragraphs 45, 46, 47, 48, and 52. The contractor shall be entitled to no additional compensation above the unit prices bid in the schedule for the excavation, embankment, and backfill, due to the necessity for rehandling any materials which, on account of orders of the contracting officer or for any other reason, are laid aside in temporary storage piles prior to transporting to embankment or backfill. Except as otherwise provided in paragraph 46, the unit prices bid in the schedule for excavation shall include all costs in connection with separating the materials into sizes, where required, and the temporary and permanent disposal or wasting of the materials excavated: *Provided*, That all materials actually placed in the embankment or in structure backfill will again be included for payment under appropriate items of the schedule for embankment or backfill. Except as otherwise provided in paragraph 39 for diversion and care of river during construction and unwatering foundations, the unit prices

bid in the schedule for excavation shall include the cost of all labor and materials for cofferdams and other temporary construction and of all pumping, bailing, draining, and all other work necessary to maintain the excavation in good order during construction and of removing such temporary construction where required.

41. Paragraph 54 of the specifications provides in part as follows:

54.—*Embankment construction, general.*—For the purposes of these specifications, the term "embankment" includes the earth-fill portion of the dam, the cobble and sluiced gravel-fill at the downstream toe of the dam, the cobble and rock fills on the slopes of the dam, and the rip-rap on the upstream face of the dam. The embankment shall be constructed to the lines and grades established by the contracting officer, which, in general, will be the lines and grades shown on the drawings, increased by such heights and widths as may be determined by the contracting officer to be necessary to allow for settlement. No brush, roots, sod, or other perishable or unsuitable materials, as determined by the contracting officer, shall be placed in the embankment. The suitability of each part of the foundation for placing embankment materials thereon and of all materials for use in the embankment construction will be determined by the contracting officer. No material shall be placed in the embankment when either the material or the foundation or embankment on which it would be placed is frozen. The contractor shall maintain the embankment in a manner satisfactory to the contracting officer until the final completion and acceptance of all of the work under the contract. Each portion of the embankment shall be constructed in accordance with the specifications therefor, including the provisions of this paragraph. All portions of the required embankment, whether constructed of materials excavated for other required parts of the work or from borrow pits will be measured and paid for in embankment, after compacting if required, which payment will be in addition to the payment made for the excavation, separation, and transportation of the required materials, and shall include the cost of rehandling materials taken from required excavations and deposited temporarily in storage piles, and placing the materials as herein specified. It may be feasible to transport a large portion of the materials which are excavated for other required parts of the work and which are suitable for embankment construction, directly to the embankment at the time of making the excavation, but the contractor shall be entitled to no additional compensation above the unit prices bid in the schedule for excavation and embankment by

reason of it being necessary or required by the contracting officer, for any reason, that such excavated materials be deposited in temporary storage piles prior to transporting to the embankment.

42. Stockpiling of the yardage involved in this claim was conducted for the reasons outlined above and not because the material was too wet for placement in the embankment at the time excavated. During the process of stockpiling plaintiff's superintendent Stewart asked for, and received, partial payment of 20 cents per cubic yard for the material excavated and stockpiled. This 20 cents was understood to be a portion of the 35-cent unit price covering excavation, screening, and hauling to the embankment.

43. Plaintiff claims under this item \$36,610.79. In said amount was included the cost of screening, and other costs predicated upon the schedule of equipment rental rates which plaintiff says were agreed to by construction engineer Burns. Burns had no authority to use any schedule of equipment rental rates other than the schedule promulgated from and issued by the Office of the Chief Engineer of the Bureau of Reclamation in Denver. The rates used by plaintiff in its claim are in excess of such rates and the weight of the evidence fails to show any agreement to plaintiff's rates by Burns.

44. Plaintiff's costs of rehandling this stockpiled material, exclusive of any cost for hauling it to the screening plant, screening and rehauling to the embankment, all of which were required under item 11 of its pay schedule, were \$5,370.08, and consist of the following items:

Labor	Hours	Rate	Amounts
Lorain shovel operator	298.5	\$1.50	\$447.75
Lorain shovel oiler	291.5	.80	233.20
Truck operators (waiting for load)	298.5	.80	238.80
			<u>919.75</u>
Pay-roll insurance and taxes at 9.85%			90.60
Total labor cost			<u>1,010.35</u>
Equipment			
Lorain shovel No. 77	298.5	7.83	2,337.25
Euclid trucks, 12 cu. yd. (reloading time)	298.5	5.14	1,534.20
Total costs			<u>4,881.80</u>
Superintendence, general expense and profit, at 10 percent of other costs			488.19
Total			<u>5,370.08</u>

Claim No. 3

For rehandling material excavated from outlet works

45. During September and October 1938 plaintiff was excavating from the bottom of the open cut for the outlet conduit. This conduit was to rest on bed rock and seepage along the surface of this bed rock had rendered the material being excavated too wet for placement on the embankment. The material was glacial till.

46. The contractor was directed by the defendant's engineers to place this material in the reservoir area upstream from the dam and on the left of the inlet channel leading to the outlet works. Defendant's instructions do not appear to have been specific or definite as to the purpose of this placement on the material and plaintiff was under the apprehension that such placement constituted a waste of the material and was for the purpose of forming a blanket in the area of deposit. A blanket had previously been constructed at a similar location near the left abutment of the dam. Plaintiff deposited the material in "windrows" and later in the summer of 1939, after it had dried out, leveled these windrows with a bulldozer.

47. In the fall of 1939 the defendant's engineers tested the material in question for moisture content and found this suitable for placement in the dam. The plaintiff objected to the second handling of this material and the defendant agreed to have such material moved to a V-shaped depression between the blanket near the toe of the dam and near the left abutment.

48. The total yardage excavated from the outlet works and involved in this claim was 7,207 cubic yards; 5,241 cubic yards were moved to the V-shaped depression. Thereupon the defendant ordered plaintiff to move the remaining 1,966 cubic yards, process it at the screening plant, and place it on the dam.

49. Plaintiff claimed that all of the yardage involved had been wasted to form the blanket and protested against the second handling of such yardage. It filed a claim for such work as an extra in the sum of \$5,078.49. After negotiations the defendant issued work order No. 6, December 18, 1940, allowing pay at an additional 35 cents per cubic yard for the 5,241 cubic yards moved to the V-shaped depression. The defendant declined to pay the additional sum for the removing of the 1,966 cubic yards removed to the embankment after screening.

123 Extra work order No. 6 contained the following paragraph:

As the work was not provided for in the schedule of bids, you will be compensated in accordance with paragraph 10 of Specification No. 705.

Sec. 30 of the specifications is as follows:

30. *Right to change location and plans.*—When additional information regarding foundation or other conditions becomes available as a result of the excavation work, further testing, or otherwise, it may be found desirable to change the location, alinement, dimensions, or design of the dam or appurtenant works to conform to such conditions. The Government reserves the right to make such reasonable changes as, in the opinion of the contracting officer, may be considered necessary or desirable, and the contractor shall be entitled to no extra compensation because of such changes, except that any increase in the amount of excavation, concrete, or other required work, for which items are provided in the schedule, will be paid for at the unit prices bid therefor in the schedule. The contractor's plant shall be laid out and his operations shall be conducted so as to accommodate any reasonable change in the location and design of the dam and appurtenant works, or any part thereof, without additional cost to the Government.

Since under the language of Sec. 30 the contracting officer's justification for payment of the yardage moved the second time to the "V shaped" depression could not rest upon the consideration that such place of deposit represented a new and different design, its justification must rest on the ground that the material had come finally to rest in the blanket. In this view, the yardage moved the second time to the dam is likewise entitled to a second payment at the rate allowed in Extra Work Order No. 6. This amount would be $1,966 \times \$0.35$ or \$688.10.

50. Plaintiff's costs of rehandling 1,966 cubic yards of this material, exclusive of any costs for hauling it to the screening plant, screening and rehauling to the embankment, all of which
124 were required under Item 9 of its pay schedule, were \$248.70, and consist of the following items:

Labor	Hours	Rate	Amounts
Dragline operator	21.5	\$1.50	\$32.25
Dragline oiler	21.5	.80	17.20
Lorain 77 shovel operator	21.25	1.50	31.88
Lorain 77 shovel oiler	20.25	.80	16.20
Euclid truck operators (waiting for load)	42.75	.80	33.40
			130.93
Pay-roll insurance and taxes at 9.85%			12.90
Total labor costs			143.83

Equipment	Hours	Rate	Amounts
Lima dragline No. 901	21.5	13.87	\$298.20
Lorain No. 77 shovel	21.5	7.83	168.34
Euclid trucks, 12 cu. yd. (reloading time)	42.75	5.14	219.73
Total cost for rehandling 7,207 cu. yds.			830.10

The cost of rehandling 1,986 cubic yards at $11\frac{1}{2}$ cents per cubic yard is \$226.09; plus 10 percent for overhead and profit of \$22.61, totals \$248.70.

Claim No. 4

Cost of Excavating cut-off trench deeper and to steeper slopes than originally staked or shown on plans

51. Plaintiff claims cost for excavating the cut-off trench between approximate dam axis stations 6 + 00 and 7 + 75 from the left abutment as an extra item, under paragraph 10 of the specifications.

Plaintiff contends that it was required to perform this work by excavating at much steeper slopes than that required in the specifications and that it was hindered and delayed in its performance by reason of the necessity of excavating this material in the confined area of the cut-off trench as deepened.

52. The contract specifications provide in part as follows:

43. *Open-cut excavation, general.*—Except as otherwise provided in these specifications for definite features of open-cut excavation or as otherwise shown on the drawings, open-cut excavation will be measured for payment to slopes of 1 to 1 for common excavation and $\frac{1}{4}$ to 1 for rock excavation, * * *

Provided further, That for any required excavation 125. where, in the opinion of the contracting officer, the conditions warrant, the excavation will be measured for payment to the most practicable dimensions and lines as staked out or otherwise established for the contracting officer; * * *

* * * * *

48. *Excavation for embankment toe drains and cut-off trench.*

* * * The contemplated alignments and cross-sectional dimensions of the trenches are shown on the drawings, but the alignments and dimensions shown will be subject to such changes as may be found necessary by the contracting officer to adapt the toe drains and cut-off trench to the conditions disclosed by the excavation, and the contractor shall be entitled to no additional allowance above the unit prices bid in the schedule for excavation for embankment toe drains and cut-off trench on account of such changes. Accurate trimming of the slopes of the trenches will not be required but the trenches shall conform as closely as practicable to the lines and grades shown on the drawings or established by the contracting officer. * * *

Plaintiff was paid for the actual excavation involved in deepening the cut-off trench 35 cents per cubic yard, as provided for under Item 11 of its contract pay schedule.

53. Contract drawing No. 191-D-46 provided for installation of a cut-off wall within the cut-off trench from the left abutment of the dam to approximate axis station $4 + 75$, or such terminal as directed by the contracting officer. This cut-off wall was required to be anchored in bedrock a minimum of three feet.

Contract drawing No. 191-D-44 shows the approximate slope of the bedrock under the axis of the dam extending from both right and left abutments, where cut-off walls were required. This drawing also reveals analyses of underlying material in the construction area by test pits and drill holes at various places.

54. In stripping the area adjacent to the left abutment a large quantity of pervious sand was encountered, which extended upstream from the toe of the dam and had to be removed and wasted. Considerable seepage was encountered between the pervious stratum of sand and the underlying glacial till. This water came from the reservoir created by the cofferdam which had been constructed immediately above this area.

126 For this reason the defendant determined to extend the concrete cut-off wall from the left abutment toward the center of the dam or to approximate axis station $7 + 50$, where test pit No. 12 had been excavated. Test pit No. 12, represented on contract drawing 191-D-44, indicated that bedrock would be encountered at a depth of approximately 7,528 feet elevation, or approximately 60 feet below the ground surface.

55. The proposed extension of the cut-off wall was approximately 275 feet within the cut-off trench.

The area of the primary cut-off trench which required deepening to bedrock for the construction of the cut-off wall was approximately 225 feet in length. The surface grade of this terrain was approximately 7,597 feet elevation at approximate station $4 + 75$, where the terminal of the cut-off wall was designated on the contract drawing 191-D-44, 7,588 feet at approximate station $7 + 50$, where test pit No. 12 was excavated, and 7,554 feet elevation at approximate station $9 + 50$ where test pit No. 11 was dug on the left of the river channel. The river channel itself was at approximate station $11 + 00$ with elevation of 7,550 feet.

Test pit No. 14, downstream from the axis of the dam at approximate station $5 + 00$, and drill hole No. 15, upstream from the axis and in the approximate line of the cut-off trench, indicate bedrock at approximate elevation 7,556 feet, or 40 feet below the surface. This is about 25 feet beyond the original terminal of the cut-off wall. This bedrock was indicated to follow generally the contour of the surface ground, but sloping from a relatively higher elevation near the surface of the ground at the left abutment to a much

lower level toward the river. While test pit No. 12 indicated bedrock at approximate elevation 7,528 feet, test pit No. 11, which was dug some 200 feet further toward the river channel and to a depth of approximately 7,505 feet elevation, did not encounter any bedrock.

56. The cut-off trench was originally staked out by defendant's engineers to end the cut-off wall on bedrock at approximate axis station $4 + 75$, as shown on drawing 191-D-46, or approximately 40 feet below ground elevation at the terminal of the wall. For the reasons stated above, the construction engineer directed 127 plaintiff to deepen the cut-off trench down the contour of the rock to the newly designated terminal of the cut-off wall at approximate station $7 + 50$.

Plaintiff performed this excavation, deepening the trench to a point beyond the newly designed terminal of the cut-off wall, and the plaintiff did not protest the performance of this work as directed.

57. The cut-off trench was excavated to approximate elevation 7,528 feet or 60 feet below the ground surface in the area of test pit No. 12, but bedrock was not encountered, although some large boulders were discovered, which may have been erroneously interpreted as bedrock in the contract drawing. Plaintiff's superintendent then protested to defendant's representatives orally and objected to further excavation for bedrock. The material encountered was a conglomerate of glacial till, embedded with boulders and very tightly cemented. It was impervious and suitable for the foundation for embankment-fill, except that the concrete cut-off wall had to be anchored into solid rock. Some of this material became excessively wet and soupy and was wasted. Part of it was stockpiled at the left abutment below the axis of the dam and was the subject of rehandling under Claim 2. It could be excavated with a dragline only with difficulty, and plaintiff used a shovel, which loaded the hauling equipment from the rear because of the confined area of the work.

58. Plaintiff was directed to continue the excavation and was told that bedrock should be encountered within a few feet of elevation 7,528 feet, based on the assumption that the slope of the bedrock would not vary greatly from the grade encountered toward the left abutment between approximate axis stations $3 + 50$ and $5 + 50$. Plaintiff continued the excavation in shallow lifts of about two feet to approximate elevation 7,524 feet within the extended area of the trench, without encountering any bedrock. The Government engineers then dug a test pit about 3 feet deeper in the deepest part of the excavation but found no bedrock.

Defendant's construction engineer then directed plaintiff to level off the trench foundation and prepare this area for backfill with impervious material. It had been excavated to approximate eleva-

tion 7,522 to 7,524 feet in the extended area about 175 to 128 200 feet in length. The foundation area of the cut-off trench which continued toward the river channel was much higher, except in the area of test pit No. 11 which had to be excavated and timbers removed to the full depth of the test pit and the drift or tunnel extending some 40 feet toward the river channel from this test pit.

Plaintiff was required to excavate a small drain trench along the upstream side of this deepened portion of the cut-off trench, and place drain tile embedded in gravel in order to properly drain the foundation area. This tile system drained into a sump where it was pumped out and was later refilled with grout through connecting risers, after the foundation fill had been placed. This tile drainage is the subject of claim 6 herein.

59. After this excavation was performed it was discovered that the bedrock continued at a much steeper grade from approximate axis stations 5+50 to 6+22. At the latter point it came to an abrupt drop, and the cut-off wall was terminated here, at approximate elevation of 7,524 feet, with an extension of about 147 feet from the original terminal.

60. In view of the showing revealed by the log of test pit No. 12 on drawing 191-D-44, it was reasonable for the defendant to anticipate bedrock at elevation 7,528 feet at this point, with a gradual rise in the slope of the bed rock to approximate elevation of 7,550 feet some 250 feet toward the left abutment. Having discovered the unreliability of the information from test pit No. 12, after deepening the trench to elevation 7,528 feet, the composition of material below this elevation and the location of bedrock in this area were unknown to either the defendant or plaintiff, and further excavation in this area became exploratory.

This excavation was performed with steep side slopes, as much as 0.3 to 1, rather than 1 to 1 as specified. Yardage was not measured for payment at 1 to 1 grade. It consisted of tightly compacted material and the slopes stood firm, but it was more difficult to remove. The width of the bottom of the trench, as deepened, was from 16 to 26 feet. Excessive seepage accumulated in this low area and it was more difficult to drain. Muddy areas could not be pumped out, but had to be scooped up and hauled out in small quantities. This deepening operation was performed during 129 the last half of May and the first part of June 1939. It held up plaintiff's embankment placement operations, and its entire operations were delayed.

61. On July 12, 1939, plaintiff submitted its claim for additional work between stations 6 and 8 from the left abutment, after the cut-off trench had been excavated as staked by the defendant and in accordance with the original plans. Defendant does not contest

the correctness of this statement, except as to rental rates applied for equipment used. This claim is based on: actual labor costs, equipment rental and ten percent for overhead and profit in accordance with paragraph 10 of the specifications. The claim was restated from time to time, and was included with other exceptions to the final pay voucher on March 14, 1942.

In his findings and decision of December 29, 1942, the contracting officer denied plaintiff's claim in toto; finding that plaintiff failed to make its objections and protests of record in the manner and time limits required, and that changes made by the Government were in accordance with the specifications; that it was the responsibility of the contractor to properly unwater the construction area, and that the contracting officer is prohibited from making any additional payment for increased costs on account of excavating wet material.

The findings and decision of the contracting officer were affirmed by the Secretary of the Interior upon appeal by plaintiff.

62. Plaintiff's engineer computed the yardage involved in deepening the cut-off trench between the axis station 6+00 and 8+00 and 9+50 to 10+00, in the amount of 6,095 cubic yards.

The excavation performed in the area between stations 9+50 and 10+00, adjacent to the river channel, was carried to the full depth of test pit No. 11, and the lateral drift extending about 40 feet toward the channel. It required the removal of timbers from this test pit, the excavation of overlying materials above the drift or tunnel, and backfilling the pit and excavation with impervious materials.

Drawing 191-D-44 shows test pit No. 11, with the drift excavated from the pit toward the channel, all of which had to be cleared and refilled. Test pit No. 11 was about 50 feet deep, extending to approximate elevation 7,505. This area was excavated and backfilled in the fall of 1938. There is no evidence that the side slopes of this excavation were steeper than that specified. This excavation was not involved in the area complained of. The deepening of the cut-off trench for the extension of the cut-off wall was some 200 to 400 feet nearer to the left abutment.

Plaintiff concedes that it was paid for 6,095 cubic yards at the rate of 35 cents per cubic yard under item 11 of its pay schedule for actual excavation in deepening the cut-off trench with steeper side slopes than that specified for open-cut excavation.

The evidence is not sufficient for a determination of the total excavation involved in deepening the cut-off trench between stations 6+00 and 8+00 for the extension of the cut-off wall to bedrock. That portion involved in continuing the deepening process below elevation 7,528 down to 7,522 feet elevation was only 815 cubic yards.

The evidence does not disclose what the yardage would have been by measurements of the actual depth on a 1 to 1 slope.

63. Plaintiff's costs of excavating and hauling materials by deepening the cut-off trench between axis stations 6+00 and 8+00 for the purpose of extending the cut-off wall, after the trench had been excavated to the depth and grades as originally staked, were \$5,859.02, and consist of the following:

Labor.....				\$1,129.54
Pay roll insurance and taxes.....				98.42
Total labor cost.....				1,227.96
Equipment rental	Values	Hourly rate	Hours engaged	\$
Lima shovel #901, 2½ cy.....	34,225	11.49	115	1,321.35
Lorain shovel #77, 1½ cy.....	9,200	7.83	8	62.64
RD #8 tractor, 95 hp.....	7,905	4.06	86.5	351.19
RD #8 tractor & dozer.....	9,887	4.87	48	233.76
RD #8 tractor & Athey wagon of 18 cy.....	12,355	5.71	18	102.78
Euclid truck, 8 cy.....	7,850	3.50	535	1,872.50
Euclid truck, 12 cy.....	12,750	5.14	30	154.20
Total equipment cost.....				4,098.42
Superintendence, general expense and profit, at 10 percent of other costs.....				532.04
Total cost.....				5,859.02

131 Plaintiff was paid at the rate of 35 cents per cubic yard under item 11 of its contract pay schedule for 6,095 cubic yards which it computed in deepening the cut-off trench in this area, amounting to \$2,133.25.

Plaintiff's excess cost in performing this work was \$3,725.77, or \$.611 per cubic yard.

If plaintiff is entitled to extra compensation for only the yardage below elevation 7,528, the amount would be $815 \times \$.611$ or \$497.97.

Claim No. 5

Cost of widening spillway for change in location of sewer pipe drains

64. In May, 1939, written orders were issued directing plaintiff to perform additional excavation to place sewer-pipe drains along the outside edge of wall footings in lieu of constructing them along the spillway side-wall footings above the cantilever base, as provided in the contract specifications, and that payment would be made at the contract unit price.

This work was performed by plaintiff, as directed, and on July 12, 1939, it submitted a claim under paragraph 10 of the specifications, in the sum of \$3,829.30. At a conference held in the office of the Chief Engineer in Denver on August 27, 1940, the contracting officer decided that this claim resulted from a change in plans

and that the contractor was entitled to be paid an equitable price therefor.

Order for changes No. 5, dated April 12, 1941, was transmitted to plaintiff on May 22, 1941, providing in part as follows:

(a) Excavating spillway to additional width between stations 14 + 50 and 19 + 00 on left side and between stations 17 + 04 and 18 + 57 on right side, to permit placing sewer-pipe drains outside of wall footings for the lump sum price of \$2,450.

This amount was approved by the contracting officer in his decision of December 29, 1942, and was not appealed by plaintiff.

Plaintiff now claims the sum of \$2,450, and states that it declined to accept the order for change No. 5 for the reason that its original claim included its sub-contractor's claim for additional gravel, which was later settled. Defendant does not contest this claim.

Claims Nos. 6 and 10

Claims for cost of constructing drainage systems for unwatering cut-off trench on the left abutment

65. These claims are considered together since they both involve measures adopted to unwater the cut-off trench near the left abutment prior to refilling it with impervious material.

The area of the cut-off trench requiring drainage involved herein is the same portion of the trench requiring deepening for changes in the cut-off wall under Claim 4. The evidence set forth under Claim 4, with respect to excessive seepage, sand excavation and deepening of the cut-off trench, will be considered also in connection with these claims.

Plaintiff claims that the placement of tile drainage required to properly unwater this area was extra work for consideration under paragraph 10 of the specifications. Claim 6 covers tile drainage placed and embedded in a small gravel filled trench in the bottom of the cut-off trench between approximate axis stations 6 and 8, for which plaintiff claims \$2,529.59.

Claim 10 covers the excavation of a small trench and placing of tile embedded in gravel between approximate axis stations 5 + 00 to 8 + 75, for which it claims extra costs of \$2,750.28. In addition to these costs, plaintiff claims refund of material used in these drains which had been originally furnished by the Government but charged back to plaintiff in its final voucher in the sum of \$398.53.

66. The contract specifications provide in part as follows:

39. *Diversion and care of river during construction and unwatering foundations.*—The contractor shall construct and maintain all necessary cofferdams, channels, flumes, and/or

other temporary diversion and protective works; shall furnish all materials required therefor; except the metalwork and cement for the log-crib drop as provided in paragraph 25, and shall furnish, install, maintain, and operate all necessary pumping and other equipment for unwatering the various parts of the work and for maintaining the foundations, cut-off trenches, and other parts of the work, free from water as required for constructing each part of the work. * * * The cost of furnishing all labor, equipment, and materials for constructing cofferdams, channels, flumes, or other diversion and protective works, removing or leveling such works where required, diverting the river, maintaining the work free from water as required, disposing of materials in the cofferdams, maintaining the diversion channel and log-crib drop, and of all other work required by this paragraph, except the excavation and refill in the diversion channel, the construction of the log-crib drop, and placing the riprap in the diversion channel, shall be included in the lump-sum price bid in the schedule for diversion and care of river during construction and unwatering foundations:-

43. *Open-cut excavation, general.* * * * Except as otherwise provided in paragraph 39 for diversion and care of river during construction and unwatering foundations, the unit prices bid in the schedule for excavation shall include the cost of all labor and materials for cofferdams and other temporary construction and of all pumping, bailing, draining, and all other work necessary to maintain the excavation in good order during construction and of removing such temporary construction where required.

55. *Earthfill in embankment.*—The earth-fill portion of the embankment shall be constructed to the lines and grades shown on the drawings or established by the contracting officer. All portions of test-pit and cut-off trench excavation within the area to be covered by the embankments and below the required stripping lines for the embankment foundation shall be filled with compacted material as herein specified for earth fills and shall be considered as parts of the earth fill.

(a) *Preparation of foundations.*—No material shall be placed in the earth-fill portion of the dam until the foundation therefor has been unwatered and suitably prepared and has been approved by the contracting officer. * * *

(g) *Tamping*.—Portions of earth fill between rock projections on the dam abutments, near cut-off walls and other concrete structures, and elsewhere, which in the opinion of the contracting officer cannot be compacted properly by the use of rolling equipment shall be thoroughly compacted by the use of mechanical tampers.

67. Plaintiff was paid the lump sum of \$15,000 under Item 1 of its contract pay schedule for the diversion and care of the river during construction and unwatering foundations for construction.

The springs or seepages were first encountered in this area at approximate elevation 7,550 feet between the previous sand, involved in Claim 20 herein, and the glacial till and other impervious material which was excavated considerably deeper in this area for the purpose of extending the cut-off wall from the left abutment. The drainage system constructed at this elevation is known as the upper drainage system.

The second pronounced seepage or series of springs was encountered at or near the bottom of the cut-off trench as deepened in the area of axis stations 6 to 8, at approximate elevation 7,522. The lower drains were those placed in the bottom of the trench, and the upper drains represent the system which was placed at approximate elevation 7,550 feet, after the trench had been refilled with about 30 feet of impervious material. Both systems were in the same area of the cut-off trench. The lower drain was constructed within a trench 1.2 feet deep and approximately 1 foot wide at the bottom with a flare to 1½ feet at the top. This trench was partially filled with screened gravel upon which a 4-inch drain tile was placed with open end joints, and around which additional gravel was packed, covering the top of the drain tile. Waterproof tar paper was placed over the top of the entire drainage trench in order to withhold any fine materials which might be compressed into the gravel bed when the embankment material was placed.

68. There were approximately 210 feet of this type of drainage placed along the upstream side of the bottom of the trench between approximate stations 6 + 30 and 8 + 40, with an extension of trench-filled gravel for about 50 feet further to approximate station 8 + 90. There was also placed at the bottom of the downstream side of the trench about 40 feet of a similar tile drain between stations 135 7 + 05 and 7 + 45 with an extension of about 25 feet of gravel-filled trench to about station 7 + 70. A 3-inch metal pipe was placed across the trench, connecting the downstream drain with the upstream drain.

A 4-inch tile drain was built across the bottom of the trench from the lower to the upstream side, connecting with the upstream drain at approximate station 6 + 30 and immediately below the termination of the cut-off wall.

A concrete sump was installed about midsection in the upstream drain. A galvanized iron corrugated pipe, commonly used for culverts, was placed vertically in this concrete sump. The drainage water was pumped out through the corrugated pipe housing from the concrete base of the sump. There were also installed twelve 1½-inch galvanized pipe risers with connections to the tile drain at various points throughout the system and leading up through the fill to be placed. These galvanized pipes were installed for the purpose of filling the drainage system with sand and cement grout which was forced through the galvanized pipes by pressure into the tile drain and out through the open joints, thus effectively sealing the drainage structure against seepage into the embankment. This grouting was performed only after the trench had been filled with impervious material to a depth of approximately 30 feet.

69. The upper system of drainage was constructed at about an elevation of 7,550 feet. The construction was similar to the tile embedded in gravel in the lower system, except that the small trenches were about 2½ feet deep; 2 feet wide at the bottom and 4 feet wide at the top, and both 4 and 6 inch tile was employed in this system. This drainage system was constructed only on the upstream side of the trench. It contained one concrete base sump and twelve 1½-inch pipes connecting the drain for the purpose of grout filling. This upper drainage system extended for about 500 feet between approximate axis stations 5+00 to 8+75. It was constructed generally much more distant from the center of the trench, starting about 20 feet from the cut-off wall at approximate station 5+00, and thereafter bearing to the right and away from the cut-off wall, and finally terminating in a large semi-circle extending upstream and away from the trench approximately 200 feet.

136 After additional embankment was placed approximately 35 feet above the upper drain, grout was similarly forced into this system of drainage through the 1½-inch grout pipes and through the open-end tile joints into the gravel fill of the drainage trench.

70. When defendant's engineers suggested these tile drainage systems plaintiff protested the installation of this type of system as being unnecessary and much more expensive. Plaintiff contends that it did not contemplate the use of any tile drainage system in unwatering the construction foundations, but that drainage would have been accomplished by open ditches to sumps. However, plaintiff has not explained how the use of open ditches and sumps would have enabled it to place the fill in area "free from water." The defendant's representatives advised Martin Wunderlich that an accurate record of the cost of installing these drainage systems would be kept and that should the contracting officer later decide that this work involved an extra item it would be paid for by

the Government. Plaintiff was advised by the construction engineer that payment would be recommended by him.

71. All materials required for the construction of these drainage systems, other than the gravel, were furnished by the Government. Government engineers specified the location and grades where the tile drainage would be placed and staked out the area for its construction.

The contracting officer did not issue any written order directing plaintiff to perform this drainage and plaintiff made no written protest until July 12, 1939, after the work had been completed.

The drainage system at the bottom of the cut-off trench was started about June 9, 1939, after Government engineers terminated the deepening operation for the purpose of locating bedrock in order to extend the cut-off wall in this area. The lower drainage system was completed and 30 feet of embankment was placed in this area during the month of June 1939. The upper drainage system was substantially less completed by the end of June and the embankment fill above this drainage system was continued in July 1939.

The tile drains were filled with grout and remained in the trench as a permanent addition to the structure. Plaintiff 137 was paid for the labor for the installation of the grout pipes and fittings. It was also paid for the grout which was forced into these drains and into the gravel fill. It has not been paid for the labor for excavating drain trenches and the installation of the drains. Materials which had been furnished by the Government were charged back to plaintiff in its final voucher.

72. On July 12, 1939, plaintiff submitted claims for extra costs of installing these drainage systems, including labor, gravel, and equipment rental, totaling \$5,279.87. Claim 6 covered its costs for the lower drainage, which was installed in the bottom of the trench as deepened for the extension of the cut-off wall, in the sum of \$2,529.59. Claim 10 covered its costs for the upper drain, which was installed at approximate elevation of 7,550 feet upstream from the primary cut-off trench, in the sum of \$2,750.28.

These claims and others involved in this case were subjects of conferences in January and February 1940, and in later discussions. During a conference in August 1940, plaintiff pointed out that it was the intent of the Government to recognize the cost of installing these drainage systems since the Government had furnished all the materials going into these systems and plaintiff was never invoiced for the material so used. The construction engineer thereupon decided that, since it was plaintiff's responsibility to unwater the construction area, all materials furnished by the Government would be charged back to it. The value of such materials used in these drainage systems in the amount of \$398.53 was deducted from plaintiff's final voucher in October 1941. Plaintiff thereafter

included in its claims the sum of \$398.53, so deducted. In his findings and decision of December 29, 1942, the contracting officer held that it was plaintiff's responsibility to unwater all construction areas, and that plaintiff was not entitled to recover its costs for this performance. He concluded that no charge should have been made for the pipes and fittings used for grouting the drainage system, which had been paid for, and that plaintiff should be refunded the sum of \$159.43 covering grout pipes and fittings which had been deducted from its final voucher.

The Secretary of the Interior confirmed the decision of the contracting officer July 7, 1943, allowing plaintiff \$159.43 for 138 grout pipes and fittings erroneously deducted from sums otherwise due plaintiff.

73. Plaintiff was required to unwater foundations in the construction areas, for concrete work and before placing the earth fill portion of the dam. The contract drawings do not specify any tile drainage in the cut-off trenches for this purpose. Drawing 191-D-46 shows only three cross-section specimens of the cut-off trench. Two sections in the middle portion of the dam were specified 20 feet deep, below the stripping line, and a width of 15 feet at the bottom with a grade of 1 to 1. One section is shown in the river channel with a minimum depth of 30 feet below the stripping line and 20 feet wide at the bottom with the same side grades. There was no cross section specimen of the cut-off trench in the area left of the river where the trench had been deepened and the drainage systems were constructed.

Excavation in this area was approximately 66 feet below the surface, but only about 30 feet into glacial till and boulders. A large pocket of sand was encountered in this area down to approximate elevation 7,550 or 36 feet below the surface, part of which the Government classified as stripping, and which classification plaintiff disputed in its claim No. 20.

The bottom of the trench in this area varied. It was only 16 feet wide at approximate station 7+50, but was 25 feet or more in width at other points throughout its 200 feet length, and substantially wider than the width specified in other areas. Springs encountered in this area were not anticipated by either plaintiff or defendant.

74. The water in the upper level at approximate elevation 7,550, where most of it was encountered, was first diverted from the excavation through open drainage ditches or flumes into the area of the river channel several hundred feet distant, and through this channel to the lower side of the proposed embankment. Of course when the trench was excavated across the river channel, this water had to be accumulated into sumps and pumped outside of the construction area. The excavation for the trench had been considerably widened at this upper elevation, and the drainage ditch

was dug along the upstream side upon a bench away from the excavation of the primary trench.

139 The seepages in the bottom of the trench were first encountered over the bedrock toward the left abutment, but some was also discovered on the downstream side of the trench toward the axis of the dam. These lower seepages caused considerable difficulty to plaintiff in excavating this area. It was not until plaintiff had completed the excavation and was preparing to place embankment fill that the construction engineer determined that open ditch drainage would not suffice for the unwatering of the foundations for placing embankment. Without unwatering it was impossible to maintain the embankment at optimum moisture for compaction, since the seepages into the bottom of the trench entered at different levels.

Plaintiff was required to use a mechanical tamper over the drain trench for required compaction until the fill was built up to the point where the compaction roller would not damage the drain tile. Mechanical tamping was required around the grout riser pipes and the sump pipe for about 30 feet of fill over the lower drainage system, and about 35 feet over the upper drains, to the terminals of these grout pipes. After the grout was injected into the drains the pipes were sealed over and left in the embankment.

75. Plaintiff's cost for installing the lower drain, including additional pumping, over and above what it would have cost for open ditch drainage along the sides of the trench was \$1,892.98, and consists of the following:

	Hours	Rate	Amounts
Labor			\$1,055.04
Pay-roll insurance and taxes			89.14
Gravel at 2.25 per c. y.			72.00
Hauling 260' of 4-inch tile			7.80
Equipment rental:			
Lorain No. 40 dragline	26.5	3.67	97.25
12 c. y. Euclid truck	2	5.14	10.28
8 c. y. Euclid truck	24	3.50	84.00
R. D. No. 8 tractor	4	4.06	16.24
R. D. No. 8 tractor and roller	10	5.10	51.10
Gardner-Denver compressor	85	1.94	164.90
Fairbanks Morse electric pumps	84	.25	21.00
Jaeger gas pump	96	.25	24.00
Pneumatic tampers	201	.14	28.14
Total			1,720.89
Allowance for overhead and profit at 10%			172.09
Total costs			1,892.98

140 Plaintiff's cost for installing the upper drainage system in a similar manner was \$2,101.46, and consists of the following:

	Hours	Rate	Amounts
Labor.....			\$771.00
Pay-roll insurance and taxes.....			65.14
Gravel at 2.25 per c. y.....			462.38
Equipment rental:			
Lima dragline.....	1	\$13.87	13.87
Lorain No. 40 dragline.....	46	3.67	168.82
12 c. y. Euclid truck.....	8.5	5.14	43.61
8 c. y. Euclid truck.....	17	3.50	59.50
LeTourneau carryall.....	12	2.77	33.24
R. D. No. 8 tractor.....	12	4.06	48.72
R. D. No. 8 tractor and dozer.....	1	4.87	4.87
R. D. No. 8 tractor and blade.....	2.5	5.43	13.57
R. D. No. 8 tractor and push cart.....	3	4.87	14.61
A-C K tractor and dozer.....	.4	2.81	11.24
Gardner-Denver compressor.....	42	1.94	81.48
Sehram compressor.....	29	1.94	56.26
Barnes pump.....	12	.25	3.00
Ingersoll-Rand electric pump.....	88	.25	22.00
International truck.....	9.5	1.12	10.64
Pneumatic tampers.....	188.5	.14	26.39
Total.....			1,910.42
Allowance for superintendence, general expense and profit at 10% of other costs.....			191.04
Total cost.....			2,101.46

In addition to the foregoing costs there was deducted from plaintiff's final voucher the sum of \$398.53 for materials supplied by the Government which went into the above drainage systems. Of this sum the contracting officer found that plaintiff was entitled to a refund of \$159.43, representing the deduction for grout pipes and fittings. No refund has been made to plaintiff.

The total extra costs to plaintiff for labor, materials and expense in constructing these drainage systems were \$4,392.97, as follows:

Lower drainage system.....	\$1,892.98
Upper drainage system.....	2,101.46
Materials furnished by the Government and deducted from plaintiff's final voucher.....	398.53
	\$4,392.97

76. The contract specifications provided for the installation of 4-inch tile drains under pay item 27 at 70 cents per linear foot; and 6-inch tile drains under item 26 at 80 cents per linear foot.

141 The contract specifications further provide in part:

25. *Materials furnished by the Government.*—The Government will furnish cement for use in concrete, mortar, and grout; * * * concrete or clay sewer pipe for drains; * * * The cost of unloading, hauling, storing, and caring for all ma-

materials furnished by the Government shall be included in the prices bid for the work in which the materials are to be used.

60. *Drainage, general.*—Drains shall be constructed under the downstream toe of the dam, under the floor of the spillway, under the floor of the outlet channel, and elsewhere, as shown on the drawings or as directed by the contracting officer. * * *

61. *Constructing sewer-pipe drains.*— * * * Gravel bedding of the thickness shown on the drawings or as directed by the contracting officer shall be placed in the bottom of the pipe trenches. The pipe shall be carefully laid on the gravel bedding with the bell end up and with partially open, uncemented joints, in a workmanlike manner, and to the lines and grades established by the contracting officer. * * * Payment for constructing sewer-pipe drains will be made at the unit prices per linear foot bid therefor in the schedule, which unit prices shall include the cost of unloading, hauling, storing, handling, preparing an even bedding, and placing the pipe; furnishing, hauling, handling, and placing the gravel fill about the pipe; placing burlap covering, where required; and of all other operations except the excavation of the trenches, required for the completion of the drains. * * *

77. The 4-inch and 6-inch tile drains installed by plaintiff in the upper and lower levels of the cut-off trench near the left abutment, as described in the foregoing findings, were constructed in accordance with paragraph 61 of the specifications.

There were 260 feet of 4-inch tile installed by plaintiff in the bottom of the cut-off trench and 500 feet of tile installed in the upper drainage system, of which 350 feet were 4-inch tile and 150 feet were 6-inch tile. The contract value for the construction of 610 feet of 4-inch tile drains at 70 cents per linear foot is \$427. The value of the construction of 150 feet of 6-inch tile drains at 80 cents per linear foot is \$120, or a total of \$547.

78. In connection with the installation of these drain tiles plaintiff had installed grout pipes and connections with the drainage system for which it was paid under item 32 of the contract pay schedule. The grout pipe risers, however, interfered with the placing of earth embankment and necessitated compaction around these

pipes by mechanical tampers. The extra cost to plaintiff for tamping around the grout pipes was \$431.71, consisting of the following:

Labor—tampers, 389.5 hours at 80¢	\$311.60
Pay-roll insurance and taxes at 8.45%	26.33
Rental pneumatic tampers 389.5 hrs. at 14¢ per hour	54.53
Total	392.46
Allowance for superintendence, general expense and profit at 10% of the above costs	39.25
Total	431.71

79. Plaintiff excavated approximately 225 cubic yards of material for tile drain trenches, for which it was not paid. Under paragraph 48 of the specifications this work carried the rate of 35 cents per cubic yard under item 11 of plaintiff's unit price schedule, having a value of \$78.75.

The total contract value for installing these tile drains, plus the additional expense of hand tamping around the grout risers and the value of material which the Government furnished but later deducted from plaintiff's final voucher in the sum of \$398.53, amounts to \$1,455.99.

Claims Nos. 7 and 8

Cost of constructing tile drains along the right side of the outlet channel and under the floors of the outlet and spillway channels

80. These claims involve the installation of some 431 linear feet of 4-inch tile with open end joints similar to the construction of tile drains in Claims 6 and 10. This tile drainage was installed along the right side of the outlet channel below the outlet conduit for approximately 205 feet with a wye connecting drain from approximate station 14+50 extending diagonally across the outlet channel to approximate station 15+00. Plaintiff claimed \$362.03 143 for the installation of this drainage under Claim 7.

A second line of drainage extended from the left side of the outlet channel at approximate station 15 + 82 directly across the bottom of the channel and downstream on the right hand side to the approximate confluence of the spillway and outlet channels and across the spillway channel to a sump outside the construction area. This drain was later connected with a permanent 8-inch drain in the spillway channel. Plaintiff claims \$231.98 for installing this drainage system.

All of this drainage was constructed with 4-inch tile with open end joints similar to the installations in Claims 6 and 10. The Government also furnished the tile used in these drainage systems. It totalled 431 linear feet. In the final voucher the value of the

material furnished by the Government in the sum of \$55.34 was deducted from sums otherwise due plaintiff, and plaintiff now claims refund of this amount.

81. Contract specifications set out under Claims 6 and 10, relating to the diversion of the river, unwatering the foundations for construction and drainage apply in like manner and effect to Claims 7 and 8 herein. Paragraph 78 of the specifications also provides in part:

Foundation surfaces upon or against which the concrete is to be placed shall be free from mud and debris. * * * All water shall be removed from depressions before concrete is placed, * * *. All water shall be removed from depressions before the new concrete is placed * * *. No concrete shall be placed in water except with the written permission of the contracting officer, * * *. No concrete shall be placed in running water.

Contract drawing No. 191-D-55 contains the plan of the outlet channel and drawing 191-D-49 contains the plan of the spillway.

A system of sewer pipe drains was provided under the floors of the outlet and spillway channels. There were two longitudinal drains and a series of cross drains under the floor of the outlet channel in the area involved herein. These drains connected with a sump at approximate station 13 + 50 at the down stream end of the conduit. These subfloor drains were designed to relieve 144 upward water pressure under the concrete floors of the channels and provide outlets for any accumulation of water under the channel floors.

82. About the first of June 1939, when excavation of the outlet channel and the excavation of the spillway channel in the vicinity of the confluence of the outlet and spillway channels were near completion considerable seepage was encountered from the hillside on the right of the outlet channel and a number of springs were encountered on the left side of the outlet channel.

The area of the outlet channel involved was immediately below the outlet conduit from approximate stations 13 + 53 to 15 + 56. The outlet channel extended almost parallel with the slope or contour of the hill on the right and was substantially level in this area. The water did not readily drain from this area by open-cut ditches and the foundation of the outlet channel became saturated. The Government engineers would not permit trench excavations for the installation of tile drains in the subgrade of the outlet channel nor the placing of concrete upon the foundation until it was properly dried out.

83. Plaintiff contends that the grade in this area was adequate for drainage by gravity and that open ditch drainage would have

properly restored the foundation. Open ditch drainage could have been constructed along the sides of the channel outside of the concrete construction, but defendant's engineers determined that the water could not so be properly eliminated and would not permit open ditch drainage.

Plaintiff protested the installation of gravel embedded tile drains unless it was paid the additional costs for this installation. Government engineers agreed to keep accurate costs incurred by plaintiff for this work for consideration in case the contracting officer made a determination that the work involved was outside the contract specifications. There were no written orders directing plaintiff to perform the work in the manner specified by defendant's engineers and plaintiff made no written protest or claim for additional costs until after the work had been completed.

The installation of these drainage systems was similar to the permanent drains provided under the floors of the spillway and outlet channels, except that the ditches were approximately
145 one foot deeper than the permanent drains along the channel where this additional drainage was installed. They more nearly correspond to the spillway drains outside the wall footings as changed, as appears in our findings relating to Claim 5 herein.

84. Defendant's engineers staked out the lines and grades for these drainage systems. The drainage system installed under Claim 7 under and along the outlet channel was graded upstream and connected with the permanent drain and sump at approximate station 13 + 53. From this sump the water was pumped by plaintiff back into the reservoir.

The second drainage line was installed from a point on the left side of the outlet channel at approximate station 15 + 82, across this channel and downstream and across the spillway channel at approximate station 14 + 45 into a sump on the right hand side of the spillway channel. This line drained downstream and was later connected with a permanent 8-inch drain in the spillway channel.

These drainage lines were left in the channel where they were installed and serve as permanent drains for the subgrade of the outlet and spillway channels.

While the contract specification required the unwatering of foundations for construction, it does not specify the employment of tile drains for this purpose.

85. The drainage lines involved in these claims were installed in June 1939. On July 12, 1939, plaintiff submitted its costs under paragraph 10 of the specifications in the sum of \$362.03 for the extra tile drain installed in the subgrade and along the right side of the outlet channel as Claim 7. Its claim for cost of installing the 4-inch tile drain line across the outlet channel and the spillway channel was \$231.98 as Claim 8. These claims were considered in

conferences with the contracting officer in January 1940 and at later discussions.

In a conference in August 1940 the contracting officer determined that since plaintiff was required to unwater the foundations it should be charged with the sewerpipe involved in these claims which had been furnished by the Government. Accordingly there was deducted from plaintiff's final voucher the sum of \$55.34, representing the value of the drain tile furnished by the Government and 146 used in the drains involved herein. In its exceptions to the final voucher, plaintiff increased its claims for the installation of tile by the value of the material so deducted.

In his decision of December 29, 1942, the contracting officer denied these claims in full, finding that the plaintiff failed to make its objections and protests of record in the manner and within the time limits required in the specifications and contract; that the Government did not order the drains installed at the locations as claimed but did require that the foundation of the work be satisfactorily unwatered; that the Government engineers staked out the lines and grades for installing the tile drainage as an accommodation to plaintiff; that such drains were not a necessary part of the permanent structure drains, although they may still be functioning since their removal was not required.

It was not possible to remove the drains involved herein since portions of them were constructed under the concrete foundations of the outlet and spillway channels.

Upon appeal by plaintiff the Secretary of Interior affirmed the contracting officer in his decision of July 7, 1943.

86. Plaintiff's extra costs of installing the 4-inch drains involved in these claims, with allowance for equipment rental on the basis of maximum use as that established for rentals under Claim 17, were \$497.30, and consist of the following items:

Labor.....	\$237.97
Pay-roll insurance and taxes.....	20.11
Hauling tile.....	10.98
Gravel at \$2.25 per cubic yard.....	87.75
Equipment rental.....	95.28
	<hr/>
	452.09
Allowance for superintendence, general expense and profit at 10 per cent of above costs.....	45.21
	<hr/>
Total.....	497.30

The value of tile furnished by the Government but deducted from plaintiff's final voucher was \$55.34. Plaintiff's total costs were \$552.64.

87. The contract value of the 431 linear feet of 4-inch tile drainage placed, at 70 cents per linear foot under item 27 of plaintiff's

147 contract payment schedule, is \$301.70. The rate of 70 cents per linear foot was exclusive of materials which were to be furnished by the Government. The value of material originally furnished by defendant but charged against plaintiff's final voucher was \$55.34. Plaintiff was required to excavate approximately 160 cubic yards for these tile drain trenches having a value of \$56.00 at the unit price of 35 cents per cubic yard under bid items 7 and 9.

The total contract value of the work was \$413.04.

The proof does not show the cost or the contract value of the minimum measures which would have accomplished the unwatering of the area for placing of concrete.

Claim No. 11

Cost of gravel-filled drain on the vertical curve of spillway and along the right side thereof

88. Plaintiff claims \$265.24 under paragraph 10 of the specifications for the construction of a gravel-filled drain extending diagonally across a portion of the vertical curve section of the spillway at approximate station 26 + 75 and along the right side of the spillway to a sump for a distance of about 97 feet.

The specifications quoted under Claims 6 and 10 are similarly applicable to the conditions encountered in this area.

89. Excavation for the stilling basin at the foot of the spillway channel and of that portion of the spillway leading into the stilling basin was nearing completion early in August 1939. The area involved herein is that portion of the spillway channel marked section "G-G" on contract drawing, 191-D-49. This portion of the spillway foundation was constructed with an abrupt slope or vertical curve as it terminated in the stilling basin.

Upon the completion of the grading of the foundation slope of the spillway channel in this area a spring was encountered upon the slope a little to the right of center of the spillway channel. This seepage flowed along the surface of the spillway channel foundation and accumulated in the stilling basin below. Permanent drains provided under the spillway channel could not be used to rid the area of this water because these subgrade drains were to empty into the stilling basin by means of a metal pipe protruding from
148 the drains under the concrete floor up into the stilling basin area. Concrete work had not been completed in the stilling basin.

Defendant's engineers determined that a special drain would be necessary to carry this seepage out of the construction area and proposed that plaintiff construct a gravel-filled trench diagonally across the slope of the channel foundation and down the right side

thereof. Plaintiff protested and requested a written order for the performance of this work, claiming that it was extra work under the contract specifications. Neither plaintiff nor defendant anticipated that a spring would be encountered in this area or in any of the areas previously discussed wherein tile drains were required. Defendant suggested the gravel-filled drain and required that the preparation for the foundation be acceptable for the placement of concrete thereon. The construction engineer considered that this was a requirement under the contract specifications, and declined to issue any written order for its performance.

90. Between August 4 and 8, 1939, plaintiff constructed a screened gravel-filled trench about 2 feet wide and 16 inches deep from a point to the right of the center of the spillway vertical curved foundation diagonally across the right side of the spillway channel to a sump about 35 feet below. The water was pumped from this sump over into the river channel below the stilling basin.

The concrete slabs for the spillway channel were placed above the gravel-filled drain in the subgrade foundation, and this drain became a part of the permanent foundation structure.

91. On September 8, 1939, plaintiff submitted its claim for the construction of this gravel-filled ditch known as a "French drain" in the sum of \$265.24. The defendant does not contest the amount of plaintiff's cost for this work except the value of equipment rental involving an 8 cubic yard Euclid truck for hauling material.

By decision of the contracting officer December 29, 1942, plaintiff's claim was denied in toto on the ground that the unwatering of the foundation of the spillway was an obligation of the contractor under the specification. This decision was upheld by the Secretary of the Interior upon an appeal by plaintiff.

92. Plaintiff's cost for the installation of approximately 97 feet of gravel-filled French drain was \$203.64 and consists of the following items:

Labor.....	\$87.73
Pay-roll insurance and taxes at 8.713.....	7.65
Gravel 15 c. y. at 2.25.....	33.75
Euclid truck—8 c. y. 16-hrs. at 3.50.....	56.00

185.13

Allowance for superintendence, general expense and profit at 10%..... 18.51

203.64

No Government material was involved in the construction of the drain involved herein.

The proof does not show the cost of the minimum measures which would have accomplished the unwatering of the area for placing concrete.

Claim No. 13

Claim for excavation and separation of materials upstream from station 15 + 00 in the spillway

93. Specification paragraph 46, *Excavation for Spillway*, states in part:

Common excavation from the spillway upstream from station 15 + 00 will not be required to be separated into sizes. * * *

Item 6 of the contract pay schedule provides for the payment of common excavation upstream from station 15 + 00 of the spillway at 23 cents per cubic yard. All other common excavation, requiring separation of cobbles, specified payment at 35 cents per cubic yard.

94. About August 1939, plaintiff was orally directed to separate the cobbles from a portion of the excavation upstream from station 15 + 00 of the spillway. By letter of September 7, 1939, to the construction engineer, plaintiff wrote that it expected to be paid for the additional cost of hauling this material to the separating plant, separating and rehauling it to the embankment.

On December 11, 1939, plaintiff submitted its claim for costs of excavating and separating materials upstream from station 150 15 + 00 in the spillway for the period August 31 to November 4, 1939, under paragraph 10 of the specifications, in the sum of \$4,892.70. Plaintiff was not paid for any excavation under item 6 of its pay schedule during this period.

95. On May 22, 1941, the construction engineer transmitted to plaintiff order for changes No. 5, dated April 12, 1941, and reading in part as follows:

2. In lieu of excavating common material for spillway upstream from station 15 + 00 with no requirement for separation of material into sizes, as provided by the specifications, you are directed to excavate common material for spillway upstream from station 15 + 00, and separate the suitable material from this excavation into cobbles 2½ inches or more in diameter, which shall be placed in the cobble-fill portion of the embankment, and into material less than 2½ inches in diameter, which shall be placed in the earth-fill portion of the embankment.

This change ordered payment at the rate of 50 cents per cubic yard.

Plaintiff did not accept this order for change, for the reason that it included an outstanding claim by plaintiff's subcontractor, for gravel, which was later adjusted.

96. In his report and findings December 29, 1942, the contracting officer determined that an equitable adjustment was 50 cents per

cubic yard for 8,250 cubic yards excavated and separated in the spillway upstream from station 15 + 00, and allowed \$4,125 on this claim. Plaintiff took no appeal on this decision.

Plaintiff now claims \$4,125, which sum is not contested by the defendant. Plaintiff was paid no portion of the amount allowed by the contracting officer; nor for the yardage involved in this allowance.

Claim No. 17

Claim for excavating, separating and hauling materials for embankment from borrow pit No. 2

97. Plaintiff claims its cost for excavating, separating and hauling approximately 846,891 cubic yards of material from borrow pit No. 2 during the calendar year 1940 under paragraph 10 of the specifications. This claim also includes cost of 151 excavating, separating and hauling approximately 79,847 cubic yards of material from borrow pit No. 2 in November 1939 under Item 16 of its contract at 35 cents per cubic yard. Plaintiff was paid for all the yardage excavated from borrow pit No. 2 under Item 14 of its contract at 23 cents per cubic yard.

Item 14 of plaintiff's contract unit price pay schedule provides for common excavation in borrow pits and transportation to the embankment at 23 cents per cubic yard. Item 16 provides a rate of 35 cents per cubic yard for all classes of excavation from borrow pits and for its separation of cobbles and transportation to the embankment.

98. The contract specifications provide in part as follows:

52. *Borrow pits.*—All materials required for the construction of the dam embankment, for riprap for the spillway and diversion channels, and for backfill, which are not available from required excavations, shall be taken from borrow pits as directed by the contracting officer. The location and extent of all borrow pits shall be as directed by the contracting officer, and the Government reserves the right to change the location of such borrow pits or to locate additional borrow pits as required, but such pits will be located as close as feasible to the work in which the borrowed materials are to be used. * * *. The contractor shall separate the cobbles 2½ inches or over in size from the materials excavated in the cobble borrow pits. The separated cobbles shall be placed in the cobble-fill portions of the embankment, and the undersize material, if suitable, in the opinion of the contracting officer, shall be placed in the earth-fill portion of the embankment. Materials excavated from cobble borrow pits will not be classified for payment. Payment for excavation in borrow pits and transportation to

embankment and to spillway and diversion channels will be made at the unit prices per cubic yard bid therefor in the schedule, which unit prices shall include the entire cost of excavating the materials from the borrow pits, separating the material excavated from the cobble borrow pits, and transporting the materials to the embankment and to the spillway and diversion channels: * * *

55. *Earth fill in embankment.*— * * * No stones having maximum dimensions of more than five inches shall be placed in the earth-fill portion of the embankment. Should stones of such size be found in otherwise approved earth-fill embankment materials, they shall be removed by the contractor either
152 at the site of excavation or after transporting to the embankment, but prior to rolling and compacting the materials in the embankment. Such stones shall be placed in the cobble-fill portion of the embankment as approved by the contracting officer. * * *

57. *Cobble and rock fills on slopes of embankment.*— * * * The cobble and rock fills shall consist of cobbles over 2½ inches in diameter separated from required excavation and from materials excavated from cobble borrow pits as provided in paragraph 51. [Should be paragraph 52.]

99. Contract drawing No. 191-D-45 entitled borrow pit and test hole data, designates the general areas for borrow pits. The earth borrow pit area on the right side of Pine River was later designated as borrow pit No. 1 and was extended as shown in defendant's exhibits 1A, B and C, and defendant's 17C, involving Claim 1 herein.

The earth borrow pit located on the left side of the river was later designated as borrow pit No. 2 and was extended in 1940 into areas Nos. 1 to 8, inclusive, more particularly represented in drawings marked plaintiff's exhibit 17-(24), defendant's exhibits 17-A (19) and 17-C. The cobble borrow pit designated on the contract drawing below the embankment and on the left side of the river was never actually used, although approximately 5000 cubic yards of material was obtained from this area in 1941 for the purpose of topping out the embankment. Materials had been provided and stock piled for this purpose in 1940 from borrow pit No. 2, but became flooded by the dam reservoir in the spring of 1941 and could not be used.

Contract drawing 191-D-45 specifies the number and locations where test pits and augur holes had been sunk in borrow pit No. 1 and the cobble borrow pit. No pits or holes were dug into the sub-

surface of borrow pit No. 2, although the area designated was known to contain suitable material for earth embankment.

100. During 1938 plaintiff had excavated from borrow pit No. 2 approximately 95,000 cubic yards of impervious material for use in Zone 2 of the embankment. This was taken from the top stratum of approximately 6 to 10 feet from borrow pit No. 2 as designated. Below this material plaintiff encountered coarse material containing a large quantity of cobbles in excess of five inches in diameter. No further excavation was performed in borrow pit No. 2 until November 1939. Zone 2 material, in addition to that obtained from required excavation, was obtained thereafter from borrow pit No. 1. Additional coarse materials had been excavated from small areas immediately upstream from the embankment.

101. In the fall of 1939 defendant's engineers determined that substantially all of the coarse material thereafter required would have to be obtained from the area of borrow pit No. 2. Required excavation in the construction area was substantially completed at that time. Suitable materials in the required excavation produced considerably less cobbles than had been calculated, so that it became necessary to obtain not only additional coarse material but substantially more cobble-fill from borrow pits than had been anticipated. During 1939 additional Zone 2 materials for embankment use were excavated from borrow pit No. 1. The transition materials for the embankment between Zone 2 and Zones 1 and 3 were likewise obtained from borrow pit No. 1, by mixing coarse materials in the lower strata of this borrow pit with the overlying strata of fines and clay. Additional mixing was accomplished from stockpiled materials from the cut-off trench involved in Claim 2 herein.

In September 1939 the center core or Zone 2 of the embankment had been built up substantially higher than the adjoining Zones 1 and 3. The coarse materials required in Zones 1 and 3 of the embankment were not available in borrow pit No. 1. Defendant contends that plaintiff was given the option of providing the necessary coarse materials from borrow pit No. 2 or sub-pits A to G, which were considered extensions of borrow pit No. 1. There was an adequate supply of the coarser materials in the areas of sub-pits A to G on the right side of the river, but, due to the fact that the water table was approximately 4 to 6 feet from the surface, it became impracticable to excavate deep enough to obtain the required quantities from these areas, and sub-pits A to G were abandoned at the end of October 1939. (See Claim 1 herein.)

102. About November 1, 1939 plaintiff was directed to obtain additional coarse materials required in the embankment from borrow pit No. 2. The placement and compaction of coarse materials in Zones 1 and 3 was continued until about Novem-

ber 24, 1939. Plaintiff objected to performing excavation in borrow pit No. 2 as "common" under Item 14 of its contract because of the large amount of oversized rock requiring separation, and requested that the same be classified for payment under Item 16 of its contract.

The coarser materials were thereafter excavated from borrow pit No. 2 and placed in Zones 1 and 3 of the embankment. Oversized rocks were removed by the use of rake-dozers. This work was continued until about November 24, 1939 when approximately 79,847 cubic yards of material had been excavated from borrow pit No. 2 and placed in Zones 1 and 3 of the embankment. The oversized rocks were removed by the rake-dozers from each lift as the embankment was built up and were pushed toward the toe slopes of the embankment where they were used for cobble or rock fill.

On December 11, 1939 plaintiff signed its November 1939 partial payment voucher under protest because the excavation in borrow pit No. 2 had been included under Item 14 of its contract pay schedule as common excavation, rather than under Item 16 for excavating and separating the cobbles.

103. During the winter of 1939-1940 defendant's engineers made sub-surface explorations over borrow pit No. 2 and adjacent areas extending for considerable distances up the river and toward the hills designated as areas No. 1 to No. 8. These extensions were considerably farther from the embankment where the materials had to be placed.

Borrow pit No. 2, as extended was found to contain adequate quantities of coarse material required in Zones 1 and 3 of the embankment. Small areas or pockets of fine silt and clay, suitable for Zone 2 of the embankment, were also found in portions of these areas. However, cobbles greater than five inches in diameter were determined to exist in substantially all of these materials. Borrow pit No. 2 was divided into eight areas wherein similarity of materials was found. Area No. 1, which was located in the vicinity of original borrow pit No. 2, and nearest to the embankment,

155 contained the greater percentage of oversized cobbles. The material in this area was substantially the same as that encountered by test pits in the cobble borrow pit designated on drawing 191-D-45. Other areas in borrow pit No. 2 as extended were determined to contain lesser quantities of cobbles in excess of five inches in diameter.

104. Plaintiff continued its claim for the classification of the excavation in this area under Item 16 of its contract. Numerous letters were exchanged from and after December 1939. Plaintiff advised defendant's engineers that the use of the rake-dozers for separating materials from borrow pit No. 2 was not practicable because it could not obtain quantity production by this method.

Plaintiff had constructed an additional rake-dozer unit to separate the material from borrow pit No. 2 in November 1939. Plaintiff's representatives advised defendant's engineers that it would be necessary to set up its separation plant to separate materials coming from borrow pit No. 2, and repeatedly requested advice as to the location of borrow pits for the 1940 construction season.

Defendant's construction engineer advised plaintiff's superintendent that the matter of removing 5-inch plus cobble from the earth fill of the embankment was plaintiff's responsibility and that defendant was not concerned with whether or not plaintiff found it necessary to use the separation plant for this work, that borrow pit No. 2 was designated in the specifications as an earth borrow pit and would be classified for payment as common excavation under Item 14 of its contract unit price pay schedule. Defendant's construction engineer declined to issue any written order requiring the plaintiff to excavate cobble materials in the borrow pit No. 2 as extended, holding that the extension of this borrow pit or the location of new ones was within the specific provisions of plaintiff's contract.

105. The explorations performed by defendant in borrow pit No. 2 as extended were completed about the end of March 1940, and a chart thereof, together with findings from each test pit was submitted to plaintiff on April 27, 1940.

The placing of materials in the embankment started about the end of March 1940. By April 1st the second diversion of Pine

River had been completed from the temporary diversion 156 channel through the outlet works. The area of the temporary channel was immediately built up with impervious material from borrow pit No. 1. The excavation from borrow pit No. 1 and the construction of the embankment over the temporary diversion channel up to the approximate level of other embankment fill was completed about April 21, 1940. On April 22, 1940, plaintiff moved its excavating equipment into borrow pit No. 2. Coarse material from borrow pit No. 2 was delivered to Zones No. 1 and No. 3 of the embankment. The removal of oversized rocks from this excavation was again performed by rake-dozers, since plaintiff's screening plant was being dismantled and transferred to the lower end of borrow pit No. 2.

106. Plaintiff's screening plant had been constructed on the lower side of the dam to the left of the outlet and spillway channels. Plaintiff had anticipated that it would not be necessary to move the separation plant since the specifications provided that cobble borrow pit material would be obtained from the left side of the river below the dam in the area designated "cobble borrow pit". Plaintiff contemplated hauling the cobble borrow pit material over to its screening plant near the embankment and making the necessary

separation at that point. When plaintiff was advised that use of the specified cobble borrow pit would not be necessary but that cobbles would be obtained from borrow pit No. 2, plaintiff determined that it would be advantageous to move the separation plant upstream and adjacent to the area of this borrow pit. Plaintiff dismantled and removed its separation plant during the period March 28 to May 11, 1940.

Plaintiff's separation plant as originally constructed at the dam site provided a conveyor belt to carry the material into the separating unit. In reconstructing the plant plaintiff provided a ramp whereby materials could be hauled up and dumped into a chute leading into the separation unit. A large grizzly, providing for the elimination of extra large rock, was continued in use as well as the separating unit with 2½ inch bars. Plaintiff started using the separation plant on May 12, 1940, and found that it would not operate satisfactorily. The many very large stones would tend to obstruct the chute, preventing other materials from feeding properly into the separation unit.

157 Plaintiff thereafter remodeled the separation plant, and changed the power units from Diesel to electrical motors, except in the case of the grizzly, power for which was furnished by a gas motor. Also the separation bars were changed from 2½-inch spaces to approximately 4-inch clearances in order to admit the passage of larger stones into the material for earth fill. The excavation from borrow pit No. 2 was hauled to the embankment and separated by use of rake-dozers until June 22, 1940, when the screening plant was again placed in operation. It functioned very satisfactorily and thereafter all the materials excavated from borrow pit No. 2 up until the close of the season, November 7, 1940, were run through the separation plant.

107. By letter of April 24, 1940, the construction engineer, C. A. Burns, wrote plaintiff in part as follows:

This will refer to our conversation with Mr. Martin Wunderlich of even date; relative to earth borrow pit No. 2. As stated to Mr. Wunderlich, the location of his screening plant and the method of operation are not our concern. However, in discussing the screening plant, it developed that the same screen was to be used as was used in separating material excavated from spillway. It was thought best to mention the fact that the requirement of the Government would be in compliance with paragraph 55, subsection C: "No stones having a maximum dimension of more than 5 inches shall be placed in the earth fill portion of the embankment." Likewise, all stones with maximum dimensions less than 5 inches are to be placed in zones 1, 2 or 3 of the embankment together with the balance of the material for those zones.

By reply of April 29, 1940, plaintiff protested the requirement that all stone less than five inches be left in the material and placed on the earth embankment.

By letter of May 14, 1940, the construction engineer wrote plaintiff further in respect to the separation of cobbles in part as follows:

It has been noted that the screening plant which you are erecting for processing materials from earth borrow pit No. 2 is equipped with a grizzly having bar spacing of $2\frac{1}{2}$ inches. You are advised that you will be required to remove from earth borrow pit materials only the stones having
158 maximum dimensions of more than five inches, as is provided in paragraph 55 of the specifications. The material rejected by your grizzly will be suitable for use in the rockfill portion of the dam; however, you are advised that should the amount of this material be in excess of the amount required to construct the rockfill portions of the dam, which appears likely, the Government will be unable to utilize such excess or to make any payment to you for it, either as excavation in the borrow pit or as embankment in place or otherwise. Therefore, you may desire to change your grizzly so that it will reject only the stones having maximum dimensions of more than five inches.

When plaintiff's screening plant did not function satisfactorily and it became necessary to remodel it, plaintiff changed the separating bars on the grizzly from $2\frac{1}{2}$ -inch openings to approximately 4-inch spaces, to admit stones for use in the embankment fill up to the approximate maximum, and to avoid an excess of cobbles.

108. Defendant's construction engineer wrote plaintiff on April 26, 1940, in part:

Your attention is again directed to Specifications 705, and particularly to those paragraphs which refer to borrow pits and placing of earth fill in embankment, paragraphs 52 and 55, respectively, as well as drawing 191-D-45, all of which are a part of your contract (refer to article 1 of contract). This drawing clearly indicates the location of the borrow pits from which earth embankment materials have been obtained in past seasons and from which material to complete all zones of the embankment will be secured as required. This includes the two earth embankment borrow areas shown on the right and left sides of the river upstream from the dam, and the cobble borrow area downstream, if required.

Since the location of these areas are clearly outlined on the above drawing no written instructions are required. It is further pointed out that paragraph 52 provides that the Government reserves the right to change the location and

extent of all borrow pits or locate additional borrow pits as required. The earth embankment borrow pit area on the left side of the river will probably be extended upstream to procure the different types of earth material for the various zones of the embankment.

159 - By letter of April 29, 1940, plaintiff protested the decision of the construction engineer stating that its protest was filed in accordance with paragraph 14 of the specifications No. 705.

Defendant's construction engineer wrote plaintiff on May 6, 1940, in reply to its protest, in part as follows:

The previous written instructions and rulings of the contracting officer relative to the above mentioned feature of the work have been carefully reviewed in connection with the consideration of your protest. No modifications of the previous instructions and rulings have been found necessary, and you are directed to proceed with the work in accordance with the instructions now in effect. Your letter is accepted for record as a protest in those matters which are covered by your statements, subject, however, to the conditions as stated in paragraph 14 of specifications No. 705.

109. This matter was further discussed in conferences from June 6 to 8, 1940, at which time the contracting officer determined that an equitable adjustment should be made and proposed that area No. 1 of borrow pit No. 2 be designated as a cobble borrow pit.

On June 14, 1940 order for changes No. 2 was issued by the contracting officer providing in part as follows:

In lieu of obtaining cobbles to complete the cobble fill portions of Vallecito Dam from the cobble borrow pit area as shown on drawing No. 191-D-45 in specifications No. 705, you are directed to obtain the cobbles required to complete the cobble fills from the cobble borrow pit area at the location which is indicated on attached drawing No. 191-D-47. Because of failure to secure the expected yield of cobbles from separation of cobbles from the required excavation, the excavation and separation of material from cobble borrow pits is increased to approximately 300,000 cubic yards.

You will be paid for items of work at the contract unit prices as though no changes had been made in the location of the cobble borrow pit area and the provisions for overhaul from cobble borrow pits, as stated in paragraph 52 of specifications No. 705, will apply to cobbles excavated from the cobble borrow pit area as designated by this order.

160. There was attached to this order for change a drawing designating the lower part of borrow pit No. 2, covering approximate area No. 1, as a cobble borrow pit. Plaintiff declined to accept order for change No. 2 and by letter of July 19, 1940, made a counterproposal reading in part as follows:

The Martin Wunderlich Company will accept for all excavation taken this year from borrow pit No. 2 thirty-two cents (\$32) per cubic yard, on the distinct understanding that the haul is to be paid for as cobble borrow haul, that payment for excavation will be made promptly as contemplated by the contract, and that the haul will be paid for at the time specified in the contract. This proposal does not extend to or cover cobble excavation done last fall, amounting to approximately eighty thousand (80,000) yards in area No. 1 of borrow pit No. 2.

The Martin Wunderlich Company agrees that, if, after seventy-five per cent (75%) of this work has been performed, the Bureau finds that the above price is more than the cost of the work plus ten per cent (10%), then the Bureau may pay for such work on the basis of cost plus ten per cent (10%). The thought is that, if at that time the average cost per cubic yard computed over the period during which seventy-five per cent (75%) of the work has been done plus ten per cent (10%) is less than the price above proposed, then the Bureau may pay the lesser amount, namely, such cost plus ten per cent (10%).

Plaintiff's proposal was rejected by the contracting officer by letter of August 10, 1940.

110. On August 29, 1940, plaintiff was furnished a form copy of order for changes No. 3, which was dated August 31, 1940, reading:

Pursuant to Article 3 of the contract with you dated March 16, 1938 (symbol No. 12r-8413), the following changes are hereby ordered in the drawing and/or specifications:

In lieu of obtaining cobbles to complete the cobble fill portion of the embankment of the Vallecito Dam from the cobble borrow pit area as designated on drawing 191-D-45 of specifications No. 705, you are directed to use the cobbles obtained from earth embankment borrow as directed by the contracting officer: *Provided*, That any deficiency of cobbles from the earth embankment borrow pits shall be made up of cobbles from the cobble borrow pit area: *Provided further*,

161 That in making up this deficiency you will at your option be permitted to separate the material on the same size screen as used in separating material in earth borrow

pit in lieu of $2\frac{1}{2}$ inches in diameter as provided in paragraph 57 of the specifications.

Any claim for adjustment of the amount due under the contract by reason of the changes shall be stated and filed with the contracting officer within ninety (90) days from the date of this order unless the contracting officer shall, for proper cause, extend such time.

By letter of November 22, 1940, plaintiff requested an extension of time for thirty days to file its claim under the provisions of order for changes No. 3. The extension was granted by the construction engineer November 25, 1940.

111. On December 28, 1940, plaintiff presented its claim for adjustment under order for changes No. 3 at its cost of performance plus 10% for superintendence, general expense and profit in accordance with paragraph 10 of the specifications, in the amount of \$334,994.42.

A revised claim was submitted on April 8, 1941, with costs totalling \$366,924.39.

Under date of June 16, 1941, the contracting officer replied as follows to the plaintiff's claim:

Reference is made to order for changes No. 3, dated August 31, 1940, pursuant to article 3 of contract dated March 16, 1938 (symbol No. 12r-8413.)

Your claim, dated April 5, 1941, has been considered and you are advised in regard thereto as follows:

1. The statement of claim is presented upon the basis of the total cost plus 10 percent, as shown by your records, of the operations required in excavating, separating, and transporting embankment materials from borrow pit No. 2 for use in the construction of the embankment at Vallecito Dam and includes labor costs, allowances for use of equipment, and costs of materials furnished.

2. The hours of labor and rates of pay for the contractor's employees engaged on the work under the order for changes have been checked and are found to be correct with exceptions as stated below.

3. The hours of use of equipment as set out in your claim are found to be correct except as stated below.

162 4. The cost of materials as stated in your claim is found to be correct.

5. The following exceptions are made to your claim of costs:

(a) Your claim includes allowance for the use of sheepfoot rollers and tractors for propelling the same, and for labor costs of operating this equipment. As the use of sheepfoot rollers,

on the embankment is part of the operation of placing materials in the embankment, the cost of using these rollers is not a part of the costs allowable under order for changes No. 3 and is, therefore, disallowed.

(b) Your claim for allowances for the use of equipment under the order for changes is based upon hourly rates for the several items of equipment which are in excess of the rates allowed in current work under cost-plus extra work orders. The rates allowed for the use of equipment under this order for changes are summarized on the tabulation of "Allowances for use of equipment and operating expense" attached to this order.

Adjustment of the amount due under the contract and/or in the time required for its performance by reason of the changes will be as follows:

Although there is no order or instruction of the contracting officer to you directing that the operations in borrow pit No. 2 be paid for on the basis of the actual necessary cost plus 10 per cent, you have submitted your claim on that basis, and an adjustment on such basis is now found to be equitable. You will be paid the actual necessary cost of excavating, separating, and transporting materials from borrow pit No. 2, during the year of 1940, plus 10 per cent thereof, in accordance with the following determination:

1. Labor costs (including compensation insurance and social security taxes), in the total amount of	\$89,860.42
2. Materials (explosives), in the total amount of	94.59
3. Allowances for the use of equipment and operating expense	145,230.07
Total for year of 1940	\$235,185.08

You have been paid at the rate of \$0.23 per cubic yard for excavating, separating, and transporting 846,891 cubic yards of materials, or a total sum of \$194,784.93 for materials removed from borrow pit No. 2 during 1940. The net increase in amount due for work performed under this order, during 1940, is.....\$40,400.15.

For the excavation, separation, and transportation of 79,847 cubic yards of materials from borrow pit No. 2 during 1939, you will be paid at a unit increase of \$0.0477 per cubic yard over the bid price of \$0.23, which is the same unit increase allowed for work during 1940, or the additional amount of\$3,808.70.

The total net increase in amount.....\$44,208.85.

When the embankment at Vallecito Dam is satisfactorily completed, you will be allowed as an adjustment in payments on the foregoing basis, the following:

(a) Additional requirements in borrow pit No. 2, at the lump-sum payment of.....\$44,208.85.

No adjustment in the time required for the performance of the contract will be made by reason of the changes.

An approximate estimate of the change in the amount due under the contract follows:

Estimate to accompany original

CONTRACT NO. _____

Item No.	Work or material	Previous
Items—Schedule of Specifications No. 705		
14	Excavation, common, in borrow pits for earth fill in embankment and transportation to embankment.....	3,100,000
16	Excavation, all classes, and separation of excavation in borrow pits for cobble fill and transportation to embankment.....	50,000
Item—This Order for Changes		
(a)	Additional requirements in borrow pit No. 2, at the lump-sum payment of.....	
Totals.....		
Net increase in amount of contract.....		

er for Changes No. 3
12r-8413

Quantity			Unit price	Amount	
Decrease	Increase	Unit		Decrease	Increase
.....	50,000	cy	0.23	\$11,500.00
50,000	cy	0.35	\$17,500.00
.....	l. s.	44,208.85
.....	17,500.00	55,708.85
.....	38,208.85



165 112. On June 23, 1942, plaintiff submitted a second revised claim showing costs of \$389,923.78. Plaintiff contends that the revisions in this claim were made necessary because of cost of moving its separating plant and adapting it to the material in borrow pit No. 2, which cost had previously been capitalized. At this time it claimed such cost as a direct charge against the operation in that borrow pit.

Plaintiff first moved and reconstructed its screening plant adjacent to borrow pit No. 2, eliminating the conveyor belt which had been previously in use. In remodelling the plant, plaintiff reinstalled a short conveyor belt along with other new installations, between May 12 and June 21, 1940. A portion of plaintiff's costs in reconstructing and remodeling its screening plant was due to its construction which necessitated these additional changes. The contracting officer had included in the allowance all labor costs incurred in dismantling and reconstructing the plant for use at borrow pit No. 2.

113. In his decision of December 29, 1942, the contracting officer awarded plaintiff the sum of \$44,208.85 in harmony with the statement "adjustment of compensation" which had been submitted to plaintiff and which had been declined.

Plaintiff appealed from this award by the contracting officer, and the Secretary of Interior denied this appeal July 7, 1943, confirming the allowance of \$44,208.85, as determined by the contracting officer.

114. *Equipment rental.* The difference in cost between plaintiff's claim and defendant's allowance under order for changes No. 3, relates in part to the allowances for equipment used by plaintiff in its operations in borrow pit No. 2. Both sides rely on the ownership rental schedule issued by the Bureau of Reclamation dated January 2, 1940, which was prepared by that office for consideration of allowances on extra work orders under construction contracts and is filed herein as plaintiff's exhibit 17-C. In this schedule the Bureau of Reclamation had adopted the annual rental rates established by the Associated General Contractors of America in its 1938 equipment ownership expenses schedule filed herein as plaintiff's exhibit 17-B. The rates so established are for calendar years, reduced to use periods in calendar months. There rates apply to one shift for each calendar day or thirty shifts per calendar month
166 use. Rental differences between plaintiff and defendant resulted primarily in the application of this rental schedule to the actual time plaintiff used its equipment in borrow pit No. 2, for excavating, separating and hauling.

Equipment rental rates cover the use of equipment only and include no allowance for operator's wages, fuel and lubricants or other operating supplies. The items covered in the AGC (Associated General Contractors) annual rental rates and adopted by the Bureau of Reclamation, include interest on invested capital, depreciation, insurance, taxes, storage, major repairs, general over-

hauling and painting and equipment overhead. They do not include field repairs and maintenance to insure maximum operating efficiency. The AGC annual rates were applied in the Bureau of Reclamation rental schedule to the calendar months during which the equipment could be used. Said schedule states in part:

2. (f) Monthly rates are set up, based on the use of the equipment for one shift of 8 hours each day for 30 days. If use is required for more than one shift each day, this base rate shall be increased one-half for each extra shift of use.

3. (b) Extra shift rates should be used for all shifts over 30 per month.

Hourly rates set out in this schedule represent 1/100th of the rate per month during the use period, based on 30 shifts in use.

115. During 1940 plaintiff excavated from borrow pits 1,295,724 cubic yards which was paid for under Item 14 of its unit price schedule. Approximately 846,891 cubic yards, or 65%, were excavated from borrow pit No. 2, which material was largely placed in zones 1 and 3 of the embankment. The remainder was excavated from borrow pit No. 1 for use in zone 2 of the embankment. Plaintiff also excavated 71,354 cubic yards of rock for use in the riprap fill of the dam. This represented 79,282 cubic yards of fill.

Placements of fill in the embankment during 1940 were 1,193 cubic yards of cobble and gravel fill paid under Item 20 of plaintiff's unit price schedule at 25 cents per cubic yard; 109,927 yards of cobble and rock fill paid under Item 21 of plaintiff's unit price schedule at 15 cents per cubic yard; 94,147 cubic yards of riprap paid under Item 22 of plaintiff's unit price schedule at 20 cents per cubic yard, and the remainder placed in the earth embankment under Item 19 of plaintiff's unit price pay schedule at 5 cents per cubic yard.

There were placed in the riprap fill 79,282 cubic yards which had been excavated from a rock quarry and the remaining 14,865 cubic yards of riprap was obtained from excavation in borrow pit No. 2. The total riprap, cobble and rock, and cobble and gravel fill from borrow pit No. 2 excavation was 125,985 cubic yards or 13.39% of the material excavated from borrow pit No. 2, exclusive of voids in this fill amounting to about 10% thereof.

116. Plaintiff's 3½ cubic-yard dragline was used in borrow pit No. 1 for excavating Zone 2 material. When this zone of the embankment was constructed in advance of Zones 1 and 3, the dragline was shifted to borrow pit No. 2. This procedure continued throughout the work season of 1940. During January and February 1940 plaintiff excavated and hauled some 26,316 cubic yards of rock from the quarry several miles upstream, where the dragline was used 32 hours.

Due to the shifting of excavating and hauling equipment between borrow pits No. 1 and No. 2 and work upon the embankment, plaintiff's costs for excavating in borrow pit No. 2 were determined upon actual hours of equipment use in this pit. Periods of use by calendar months could not be reasonably determined.

The Bureau of Reclamation equipment rental schedule showed normal use periods of eight calendar months each year for most of the equipment used on this job. Plaintiff operated two shifts daily during its 1940 work season, except when weather conditions did not permit dam construction.

Plaintiff computed its hourly rental rates for one full shift for eight calendar months of operation and a second shift during six calendar months of its operation. The hourly rental so determined, however, was arrived at by dividing the total rent by actual hours of performance in 1940 by the several units of equipment. Defendant computed hourly rental rates applicable to plaintiff's performance in borrow pit No. 2 by dividing the annual rate on a 168 two-shift daily basis for eight calendar months by the total number of hours for eight calendar months at 16 hours per day for each unit. No time was allowed for shut-downs on account of weather conditions, or for operations of less than two shifts per day. Thus it results that by plaintiff's rates it would recoup its yearly expense regardless of how much time its equipment was idle, while defendant's rates would require that all equipment work continuously all theoretical hours without any interruptions on account of weather, minor repairs or the like, in order to recoup such expense. Plaintiff actually operated from April 1 to November 7, 1940, or about $7\frac{1}{2}$ months except for work in the rock quarry engaging only a few units of equipment during January and February 1940.

The evidence shows that plaintiff's equipment was used at least one shift daily about 80% of the calendar period between April 15 and November 10, 1940. It further establishes that a second shift was employed only about 80% of the time the first shift was engaged, on which one-half rental rate would apply. In these findings, the rental rates established in the Bureau of Reclamation schedule were applied on the above bases to determine cost per hour for each unit. The total rental was divided by the total hours of performance on the above bases giving the hourly rate applicable to actual performance. With few exceptions the total hours computed on the above bases are considerably greater than the total hours of actual performance.

This method does establish a fair and reasonable hourly rental rate for the time equipment could have been used on a two-shift basis with due allowance for delays on account of weather conditions, minor repairs, etc. In a few instances plaintiff's equipment was actually used the full number of hours as determined above. As an example of the application of this method, plaintiff's $2\frac{1}{2}$ -

yard Lima shovel had a capital value of \$34,225, which value was used by both plaintiff and defendant. Both sides agree that the normal use period during any calendar year is eight calendar months at thirty calendar days, or a total of 240 calendar days. The AGC annual rental schedule for this type of equipment is 42% or \$14,-

374.50; or \$1,796.81 per calendar month of use. At one 169 shift per day of eight hours, this equipment could have been used 1,920 hours with a rental rate of \$7.48 per hour. Since plaintiff's costs are based on actual hours of usage, allowance must be made for shut-downs on account of weather conditions, etc. With an allowance of 20% for shut-downs the eight months calendar period represents 1,536 hours of actual performance. However, plaintiff engaged a second shift during approximately 80% of the time the first shift was in use, amounting to 1,229 hours at a second shift rate, with a rental value one-half the base rate applied for the first shift, or \$5,749.80. The hours so determined total 2,765 and the total rental amounts to \$20,124.30, or \$7.28 per hour. Plaintiff represents that its Lima shovel was actually used 2,687 hours during the 1940 construction season.

There were sixteen major classes of equipment on which plaintiff claimed its ownership rental expense for its operations in Borrow Pit No. 2 during 1940. The total value of this equipment was \$541,590. The annual ownership rental expense of this equipment, as determined from the ownership rental schedule prepared and used by the Reclamation Bureau was \$235,706.91. This rental value was predicated upon the use of such equipment for a period of eight months during the calendar year for eight hours each day at thirty days per month. This represents a work period of 1,920 hours on a one-shift basis.

Whenever it was practicable plaintiff operated on a two-shift basis. The contracting officer computed rental for each of the units of equipment on Borrow Pit No. 2 on the basis of two shifts per day, or a total work period of 3,840 hours for each unit of equipment. A 50% rental rate was applied to the second shift, thereby increasing the annual rental for the sixteen classes of equipment used to \$353,560.36. The hourly rate was then determined for each class of equipment by dividing the annual rate for a two-shift basis (150% of the one-shift basis) by 3,840 hours. The hourly rates thereby obtained were then applied to the actual hours of performance for each of these units which had been engaged in Borrow Pit No. 2 excavation and hauling. The amount so determined by the contracting officer was approximately \$107,- 170 437.04 or 30.39% of the total ownership equipment rental for this period.

This equipment was not employed 100% of the time during the eight-month work period on a two-shift basis. In fact this equipment could be used only approximately 80% of the eight-month calendar use period because of weather conditions. The second shift was only employed about 80% of the period that a first shift



1. 45

was employed, making the total maximum time that such equipment could be engaged on an eight-month work basis 2,765 hours (144% of the 1,920 hours).

Since a second shift was engaged only 80% of the time the first shift was employed, the annual rental rate would be properly increased only 40% in value. In those instances where equipment was actually used a greater number of hours than the 144% (80 plus 80% of 80) of 1,920 computed at eight hours per day, the actual number of hours at 50% rate were applied. The total annual rate so determined would be \$317,475.72. By dividing the annual rates so determined by the maximum number of hours this equipment could have been used for its actual use, whichever was greater, gives the rate per hour applicable to actual performance. By applying these rates to the actual hours of performance in Borrow Pit No. 2 gives the sum of \$137,519.42, or approximately \$30,000 in excess of that determined by the contracting officer. The rental so determined for performance in Borrow Pit No. 2 represents 43.32% of the total annual rental for the equipment involved.

117. *Repair and Maintenance.* In addition to the rental determined in the foregoing findings plaintiff's equipment costs included repair and maintenance during the time the equipment was in use. Plaintiff applied its actual cost of repair and maintenance to the actual number of hours of performance by each piece of equipment during the year to determine hourly rates. Defendant does not contest plaintiff's actual costs of repair and maintenance, but does contend that those costs were excessive and that it must be presumed that they include major repairs and general overhauling, which costs were included in the rental rates referred to above; and that a

reasonable criterion for the allocation of major repairs would be such repairs as would keep a unit of equipment down for one whole shift or more. The evidence does not sustain this presumption. The only instance shown in the evidence of any piece of equipment down for repairs for a whole shift or more was the Lima shovel which was down for repairs for half a day July 2d, and all day July 3d and 4th, 1940. Field repairs and maintenance did not materially reduce the hours of use of equipment where parts were available.

The defendant allowed an arbitrary rate for field repair and maintenance for each unit hour of performance this equipment was engaged in Borrow Pit No. 2. The allowances for field repairs and maintenance by the contracting officer were not based upon plaintiff's costs. It was purportedly determined from experience on other jobs and allegedly sustained by comparable costs on similar equipment used on the Panama Canal excavation job during a later period.

The contracting officer's computations for repairs and maintenance were generally computed at a certain percent of the rental rates. In only one instance does the contracting officer's schedule

indicate that the repair and maintenance was taken from another job. Gardner-Denver jackhammers were given an allowance of 20c per unit hour for repairs and maintenance. It was noted that this represented an approved rate on the Shasta Dam. These jackhammers had an investment value of \$205 each. However, on Euclid tractor trucks, costing up to \$20,000, the contracting officer allowed 18c for repair and maintenance; and on the dragline, for which the contracting officer determined a capital value of \$39,189, an allowance of 30c per hour for repair and maintenance was made. By applying these rates for the respective units to the actual number of hours employed on Borrow Pit No. 2, the contracting officer's allowance for field repairs and maintenance was approximately \$9,319.97, or about 5.28% of plaintiff's total cost for field repairs and maintenance, amounting to \$176,430.41.

By applying plaintiff's actual cost for field repair and maintenance to the maximum number of hours this equipment was used or could have been used, except for weather conditions, 172 would result in the sum of \$76,136.09 allocable to performance in Borrow Pit No. 2. This represents 43% of plaintiff's total repair and maintenance costs.

118. A reasonable allocation of plaintiff's maintenance costs is on the basis of the maximum number of hours plaintiff's equipment was used or could have been used except for weather conditions, minor repairs, etc. Its repair and maintenance costs for each unit have herein been applied on the same number of hours determined for rental allocations above. As an example, plaintiff's repair and maintenance of the Lima shovel for the 1940 work season was \$7,770.85, or \$2.81 per hour applicable to the 2,765 hours of performance as determined for rental purposes.

119. The only other element of cost is represented by fuel and lubricants which was determined by the contracting officer from experience on other jobs and from State officials. Plaintiff agreed to the allowances as determined and has adopted such allowances in its present claim. The allowance for fuel and lubricants on an hourly basis, as determined by the contracting officer, when applied to the actual hours of performance in Borrow Pit No. 2, gives the sum of \$27,490.57.

120. It was determined that plaintiff's actual use of the Lima 3 1/2-yard dragline was 2,876 hours during 1940 or 111 hours in excess of the hours computed on the foregoing bases. Its capital value was \$39,189. By adding 111 hours at 50% of the first shift rental rate, which amounts to \$594.96, the total hours are increased to 2,876 and the total rental value is \$23,638.09, or \$8.22 per hour. Plaintiff's total repair and maintenance for this unit was \$12,232.63, or \$4.25 per hour while in use. Defendant allowed \$1.40 per hour for fuel and lubricants which, when added to the rental and maintenance costs, make a total of \$13.87 per hour.

By applying the same bases to the 12 and 15 cubic yard Euclid trucks, it is found that plaintiff could have used the 12 cubic yard Euclid trucks a total of 16,589 hours, whereas plaintiff shows that its actual use of these trucks was 12,845 hours. The 15 cubic yard Euclid trucks are computed for available use of 33,178 hours, whereas plaintiff actually used these trucks a total of 24,510 truck-hours. Rates were reduced accordingly in both instances.

173 By applying the same bases to the 20 cubic yard Euclid trucks, it is found that plaintiff could have used these trucks a total of 5,530 hours, whereas its actual use was only 2,290 truck-hours. These units were computed on the same bases as all other equipment, although they were purchased new during the summer of 1940. The rental rate as well as the hourly maintenance cost are substantially less than they would have been had plaintiff used these trucks throughout the entire season. These new trucks, however, were used only in connection with borrow pit No. 1 excavation and for handling earth embankment after it was screened, and were not utilized in hauling cobble material direct from borrow pit No. 2.

121. Plaintiff's costs for equipment owned and used for excavating, transporting and separating materials from borrow pit No. 2, as extended, during the working season of 1940 are contained in the following table:

Description	Units	Total value	Total hourly cost	Hours engaged	Total costs
Lima shovel—2½ cy. #901	1	34,225	11.49	2,497.67	\$28,698.23
Lima dragline—3½ cy. #901	1	39,189	13.87	933	12,940.71
Caterpillar tractor (95 hp.) RD-8	9	71,145	4.06	4,742.5	19,254.55
Le Tourneau Carryall Scrapers	4	23,392	2.77	1,053	2,916.81
LeTourneau Bulldozer for RD-8	5	9,910	.81	3,504.5	2,838.65
Caterpillar Grader #77 Power Control	1	2,600	1.37	178.5	244.55
Auto Patrol Caterpillar Grader #12	2	11,000	2.14	1,907.5	4,082.05
Euclid Tractor Truck—12 cy.	6	76,500	5.14	10,750.08	55,255.41
Euclid Tractor Truck—15 cy.	12	156,000	5.19	15,325.17	79,537.63
Euclid Tractor Truck—20 cy.	2	40,000	5.34	1,811	9,670.74
Euclid Water Wagon	2	18,350	3.30	1,671.75	5,516.77
Hug truck—8 cy. gas	3	25,950	.32	64.5	214.14
Gardner-Denver Compressor	1	7,146	.94	32	62.08
Gardner-Denver Jackhammer	4	820	.24	91	21.84
Kohler Light Plants	3	1,125	.28	870	243.60
Separation Plant	1	20,000	12.27	1,601.33	19,618.32
Waukesha Motor		1,261			
International Motor		2,477			
Palmer Generator, 50 KV		500			
Totals		541,590			241,146.08

Summary of equipment costs:

Ownership rental costs	\$137,519.42
Field Repair and maintenance	76,136.69
Fuel and lubricants	27,490.57
Total equipment costs	241,146.08

The foregoing expenses represent approximately 43% of plaintiff's total costs for the use and operations of plaintiff's equipment during the 1940 work season.

174 The performance in borrow pit No. 2 represented approximately 65% of the total materials moved from borrow pits to the embankment. This material was all separated after June 21, 1940, and handled a second time in making deliveries to the embankment. Deliveries prior to June 22, 1940, were delivered direct to the embankment but required a separation by rake-dozer on the embankment, which work was approximately equivalent to the separation of such material by the separation plant.

122. Plaintiff's costs of excavating, separating and transporting materials from borrow pit No. 2, as extended, during the 1940 working season were \$340,951.73, consisting of the following classifications:

Labor—excavating, separating and transporting materials.....	\$52,894.78
Labor—moving, remodeling and erecting screening plant.....	9,583.85
Pay-roll insurance and taxes.....	6,236.82
Materials—explosives.....	94.59
Equipment rental, maintenance, fuel and lubricants.....	241,146.08
Ten percent allowance for superintendence, general expense and profit.....	30,995.61

Total (for 846,891 cubic yards at 40 cents per cubic yard)..... 340,951.73

Plaintiff was paid for excavating and transporting 846,891 cubic yards of common excavation from borrow pit No. 2 during 1940 at 23 cents per cubic yard totaling \$194,784.93. Its excess costs were \$146,166.80 or 17 cents per cubic yard.

Plaintiff was also paid 23 cents per cubic yard for excavation, separation and transportation of 79,847 cubic yards of material from borrow pit No. 2 during November 1939. The additional value of this excavation at 35 cents per cubic yard for cobble borrow pit excavation is \$9,581.64.

Plaintiff's total excess costs so computed of excavating, separating and transporting cobble materials from borrow pit No. 2 are \$155,748.44.

123. Item 16 of plaintiff's contract unit price performance schedule specified payment of 35 cents per cubic yard for all classes of excavation and separation of excavation in borrow pits for cobble fill and transportation to the embankment. Plaintiff's performance of this type of work totaled 846,891 cubic yards in 1940 and 79,847 cubic yards in November 1939, or a total of 926,738 cubic yards.

It was paid at the rate of 23 cents per cubic yard or 12 cents
175 per cubic yard less than that specified for Item 16. The total difference for excavating, separating and transporting 926,738 cubic yards at 12 cents per cubic yard is \$111,208.56

124. Paragraph 52, *Borrow pits*, provides for the payment of 2 cent per cubic yard per 100-foot station haul for all material ex-

cavated from borrow pits and hauled to the embankment in excess of the free hauls provided therein. This paragraph states in part:

The limits of free haul for materials excavated from borrow pits for the earth fill and cobble and sluiced gravelled-filled portions of the embankment will be 5,000 feet, and for cobbles excavated from the borrow pits for the cobble-fill portion of the embankment will be 2,500 feet. * * * The station haul distances will be measured along the horizontal straight lines between the center of gravity of the materials as found in excavation in the borrow pits and the center of gravity of the completed embankment. * * *

The evidence is insufficient for a determination of any overhaul of the material excavated from borrow pits.

Claim No. 18

For excavation of change in grade of inlet channel to the outlet works adjacent to trash rack

125. In 1938 the inlet channel to the outlet works was staked by defendant and excavated by plaintiff to the approximate slope grades as specified. In August 1939, the construction engineer determined that borrow pit No. 1 be extended to the vicinity of the inlet channels to both the outlet works and the spillway channel. By letter of October 11, 1939, plaintiff was advised of these changes, and the specific lines and grades to which grading would be required, with maps showing division lines between earth borrow pit excavation under Item 14 at 23 cents per cubic yard, and excavation for construction under contract Item 9 at 35 cents per cubic yard. Plaintiff did not object to these changes.

In November 1939, plaintiff was directed to regrade the slope of the inlet channel of the outlet works from a slope of 2 to 1 as changed to approximately 3 to 1 in the vicinity of the trash rack as far upstream as the riprap extended, and a 5 to 1 slope in

176 the transition into the borrow pit area. Plaintiff protested this additional excavation and regrading of the slopes. The additional grading was approximately 2,120 cubic yards, which was paid for at earth borrow pit rate of 23 cents per cubic yard.

126. On May 28, 1941, the construction engineer issued extra work order No. 7, requiring additional excavation to change the right side-slope of the inlet channel to the outlet works between the limits of the borrow pit excavation and the upstream toe of the embankment, at the price of 45 cents per cubic yard. Plaintiff did not accept this change because it wanted 45 cents per cubic yard for other yardage in the same general area which had been excavated and paid for at 35 cents per cubic yard.

In his decision of December 29, 1942, the contracting officer allowed plaintiff 45 cents per cubic yard for 2,120 cubic yards of additional grading under extra work order No. 7, less 23 cents per cubic yard which had been paid for this yardage as earth borrow pit excavation. Plaintiff was awarded \$466.40 for 2,120 cubic yards at the net increase of 22 cents per cubic yard. Plaintiff did not appeal from this decision, and now claims \$466.40 for this change. Defendant does not contest this sum, which was allowed by the contracting officer. No part of it has been paid.

Claim No. 20

Claim for reclassification of excavation of unsuitable materials for cut-off trenches and adjacent foundation areas

127. This claim is for the reclassification of 170,051 cubic yards of excavation, which consisted of the removal of sand from the cut-off trenches and adjacent areas for the foundation of the embankment. Plaintiff claims this material should have been paid for under its contract unit price schedule as cut-off trench excavation under Item 11 at 35 cents per cubic yard, instead of stripping for embankment under Item 3 at 20 cents per cubic yard. The claim is not based on costs nor are the actual costs shown.

The yardage claimed herein includes 8,533 cubic yards of sand excavation which had been reclassified as trench excavation under Item 11 by the contracting officer in his findings of fact and report dated December 29, 1942. The difference in rates between Items 3 and 11 is 15 cents per cubic yard, amounting to \$1,279.95 for the 8,533 cubic yards reclassified. This allowance has not been paid.

128. The contract specifications provide in part:—

44. *Stripping for embankment.*—The entire area to be occupied by the dam, or such portions thereof as may be directed by the contracting officer, including the areas over the temporary diversion channel, over the outlet conduit, and over the toe drain and cut-off trenches, shall be stripped or excavated to a sufficient depth to remove all materials not suitable for the foundation, as determined by the contracting officer, and only to the lines and grades established by the contracting officer. The unsuitable materials to be removed shall include top soil, all rubbish, vegetable matter of every kind, roots and all other perishable or objectionable materials which might interfere with the bonding of the embankment with the foundation or the proper compacting of the materials in the embankment or which may be otherwise objectionable. All stripped materials shall be disposed of as provided in paragraph 53.

Paragraph 53 of the specifications relating to the disposition of materials from all required excavations and stripping is as follows:

Suitable materials from all required excavations and from all foundation stripping operations shall be used in the embankment, for backfill, or for other parts of the work. Excavated materials which are unsuitable for the above-described purposes and all unsuitable materials removed in stripping operations shall be wasted. * * * The cost of disposing of all excavated materials that are wasted and of all other work described in this paragraph shall be included in the unit prices bid in the schedule for excavation and stripping. * * *

Paragraph 5, *Quantities and unit prices*, and paragraph 30, *Right to change location and plans*, are quoted under finding 14 herein. Paragraph 48, *Excavation for embankment toe drains and cut-off trench*, is quoted in part under Claim 4, Finding 52; which 178 quotation applies in like manner to Claim 20. This specification also provides:

Measurement, for payment, of the excavation for the trenches described in this paragraph will be made only to the lines shown on the drawings or established by the contracting officer, below the level of the embankment foundation after stripping, and payment for such excavation will be made at the unit prices per cubic yard bid in the schedule for excavation for embankment toe drains and cut-off trench.

Contract drawing 191-D-44 contains the location and log of drill holes and test pits of explorations in the construction area. Test pits Nos. 6 and 21 at the approximate center of the embankment foundation show minor strata of sand. These strata appear in test pit 6 at a depth of about 15 to 20 feet and in test pit 21 at a depth of about 8 to 12 feet. In no other areas do test pits expose any appreciable amount of sand which might be encountered.

129. The purpose of the cut-off trench and the placement therein of compacted impervious material was to provide an impervious seal projecting below the foundation of the dam to prevent the seepage of water under the embankment. Concrete cut-off walls were constructed in the cut-off trench from both left and right abutments several hundred feet toward the center of the dam. These walls were constructed on bed-rock, preventing seepage of water from the sides of the embankment.

The stripping of the embankment served a somewhat similar purpose by providing for the removal of unsuitable material from the remaining foundation of the embankment in order that the impervious material thereafter placed upon the embankment would form a proper bond with the dam foundation.

130. There were three general areas where substantial sand deposits were encountered. These areas not only involved excavation within the cut-off trench areas, but extended over a substantial portion of the embankment foundation; both upstream and downstream within the following areas designated by the embankment axis stations which were numbered from the left abutment:

(a) Approximate stations $5 + 50$ to $9 + 10$ to the left of the river channel.

(b) Approximate stations $12 + 25$ to $16 + 97$ on the right side of the river channel.

(c) Approximate stations $22 + 00$ to $25 + 00$ in the area of the diversion channel and to the right thereof.

The corresponding stations along the cut-off trench are: (a) approximate stations $15 + 00$ to $18 + 92$, a distance of about 400 feet on the left side of the river channel; (b) stations $22 + 05$ to $26 + 86$, a distance of 481 feet immediately right of the river channel; and (c) approximate stations $32 + 00$ to $34 + 75$, a distance of approximately 275 feet, in the vicinity of the diversion channel and to the right thereof.

131. Stripping of the foundation area was commenced in May 1938. It was started on the right side of the river and progressively extended across the embankment area to the river channel. As unsuitable material was stripped from the foundation, construction areas were staked out for excavation in order that concrete work could be started, and the foundation prepared for the placing of embankment thereon. The stripping operations exposed considerable sand in the area (c) adjacent to the diversion channel. The excavation for the diversion channel was to be performed as early as possible in order to divert the river and prepare the foundation for the placement of embankment over the old channel, along with the construction of other portions of the dam.

Upon the discovery of sand in this area and prior to setting the slope stakes for the cut-off trench, plaintiff was directed to excavate an exploration trench at right angles to the axis of the dam across the embankment area. In performing this work substantially greater quantities of sand were discovered than defendant's engineers had anticipated. A board of engineers from the main office of the Bureau of Reclamation in Denver came to the site late in June 1938 to inspect these sand deposits. Plaintiff was told to extend the excavation in this sand area as far as possible in order that the engineers might be able to make proper determination of its extent for later operations. It was found that the sand deposits extended substantially across the area for the diversion channel. This exploration trench extended through the

axis of the dam and upstream across the area of the cut-off trench.

Plaintiff was paid for the sand excavation involved within the diversion channel at 35 cents per cubic yard, under Item 4 of its contract unit price schedule, but only to the width and depth specified in the contract drawings for diversion channel excavation. Plaintiff was also paid for trench excavation involving the removal of a portion of the sand in the area of the cut-off trench. Approximately 24,119 cubic yards of sand removed in the exploration trench, which also involved the cut-off trench, was paid for as stripping at 20 cents per cubic yard under Item 3 of its contract unit price schedule. Plaintiff claims that the construction engineer agreed to pay for the exploration trench excavation at the rate of 35 cents per cubic yard, which was the unit price for cut-off trench and diversion channel excavation.

132. Cut-off trench excavation was started from the right abutment and was continued thereafter toward the left abutment following stripping operations. The first section from approximate cut-off trench stations 50 to $46 + 80$, was staked out June 20, 1938. The next section of the cut-off trench from approximate station $46 + 80$ back to station $35 + 00$ was staked out for excavation June 24, 1938. The area involving the exploration trench between approximate stations $35 + 00$ to $33 + 50$ was not staked out until June 27, 1938. The area beyond this, between stations $33 + 50$ and $27 + 00$, was staked for excavation June 25, 1938. This section traversed the diversion channel and part of the sand pocket in this area. When this latter area had been excavated heavy rains occurred which filled the cut-off trench with water 12 to 15 feet deep. The remaining area of the cut-off trench over to the river channel from Station 27 back to $22 + 04$ was staked for excavation July 13, 1938. It was in this area (b) that plaintiff encountered substantial quantities of sand in extending the cut-off trench to the river.

Defendant contends that sand was known to exist in this area and that the cut-off trench was staked for excavation to accommodate plaintiff so that the trench could be excavated and the 181 area which had been filled with water could be drained by gravity to the river channel. While the excavation of the cut-off trench from approximate station 27 to the river channel did serve the purpose of draining the trench from the right abutment, it appears that the staking of this portion of the trench was merely the next section of its extension which had been progressively staked from the right abutment to the river channel during the period June 20 to July 13, 1938.

The initial stripping in the 500-foot stretch between stations 22 and 27 did not disclose the sand which was encountered by plaintiff when excavating the cut-off trench. Approximately 4 feet of suit-

able material overlaid the stratum of sand and this suitable material was excavated and used in certain areas of the embankment. The sand pocket extended from about 2 to 8 feet below the stripping to a depth of about 30 feet.

133. After the discovery of sand in this area the construction engineer decided to abandon this section of the cut-off trench and first remove all sand from the foundation area.

Defendant's engineers set flags, not slope stakes, as a guide for plaintiff to excavate sand from the foundation in the (b) area on the right side of the river channel for about 500 feet along the cut-off trench. This sand excavation extended across the axis of the dam and down to the area where Zone 3 material was specified. Since the downstream toe of the embankment called for pervious material, sand was not removed from the foundation under this area. The flags were removed from time to time by defendant's engineers until all the sand in the area was excavated to suitable foundation material for embankment construction.

134. Plaintiff excavated approximately 97,655 cubic yards of material in (b) area which was paid for as stripping. In his final decision in this dispute, the contracting officer awarded plaintiff 8,533 cubic yards of material as trench excavation, since the original trench, later abandoned, was excavated by plaintiff after it was staked out by defendant's engineers. As stated above, plaintiff has not been paid on the basis of this award. The allowance of 8,533 cubic yards represents excavation of the original cut-off trench in this area having a width of 15 feet at the bottom, as specified
182 in drawing 191-D-46, approximately 16 feet deep and 480 feet long. The final trench in this area extended to depths of about 25 to 45 feet.

In addition to the primary trench, which was constructed along the line of the original trench that was abandoned, the Government directed the construction of a secondary trench from approximate cut-off trench station 30, about the center of the dam, across the river channel to approximate station 17 on the left side of the river. This secondary cut-off trench was approximately 100 feet closer to the axis of the dam than the primary trench, and intersected the axis at approximate station 15 + 50, opposite trench station 25 + 50 to the right of the river channel. The primary trench as ultimately constructed was substantially wider at the bottom in this area and would have been approximately 100 feet wide at the top on a 1 to 1 slope. The primary and secondary trenches, however, were restaked after the overlying pervious sand was entirely removed. Further excavation for the cut-off trenches was only approximately 15 feet into the impervious material below the layer of sand.

135. During September 1938 plaintiff stripped the embankment area on the left side of the river channel. As soon as this area was stripped the cut-off trench was staked for excavation from the left

abutment to approximate axis station No. 7, which was at about cut-off trench station $16 + 50$. The evidence does not show the date the cut-off trench was staked between stations $16 + 50$ and $17 + 91$. On September 24, 1938, defendant's engineers staked the cut-off trench for excavation from station $17 + 92$ to $18 + 91$ immediately left of the river channel. The river channel was stripped during the first half of October 1938, and cut-off trench slope stakes were set across the river channel on October 25, 1938, between stations $18 + 91$ and $22 + 04$, completing the trench from the left abutment to the right side of the river channel. The primary cut-off trench across the channel was excavated and refilled with impervious material November 1, to 15, 1938. Trench excavation was also continued in the fall of 1938 from the left abutment down toward the river channel. This excavation was resumed in May of 1939.

183 136. Between cut-off trench stations 15 and 19, a distance of about 400 feet to the left of the river channel, a large pocket of sand was encountered from approximate elevation 7,575 down to 7,550, or about 25 feet, referred to as area (a) in Finding 130. This sand pocket also extended upstream to the toe of the embankment and downstream across the axis of the dam. The material was very pervious and unsuitable for embankment use. It was largely wasted. This sand pocket was overlaid with approximately 12 to 15 feet of material suitable for placing in the embankment. Plaintiff excavated approximately 77,978 cubic yards of sand and other material in this area, which was paid for as stripping under Item 3 of its contract unit price schedule at 20 cents per cubic yard.

It was in this area that plaintiff encountered considerable seepage of water between the sand deposit and the impervious material below. This layer of sand extended upstream under the reservoir which fact, it was believed, increased the water seepage in this area. Also between trench stations 15 and 18, or approximate axis stations $5 + 50$ to $8 + 40$, plaintiff was required to deepen the cut-off trench in order to extend the cut-off wall from axis station $4 + 75$ to approximate station $7 + 50$. The deepening of the cut-off trench in this area was the subject of plaintiff's claim No. 4 herein. The installation of drains in the bottom of the trench and at approximate elevation 7,550 feet is involved in plaintiff's Claims 6 and 10.

The excavation of sand in this area extended to a depth of approximately 40 feet below the original stripping line. The grade on the left side of the river channel from approximate cut-off trench station 19 back to station $17 + 50$ was very steep. It extended from approximate elevation 7,560 feet up to approximate elevation 7,588 feet in this area.

137. Plaintiff orally protested the payment for this material under the classification of stripping. On June 17, 1939, when sand

excavation had been substantially completed plaintiff wrote the construction engineer protesting the classification of this sand excavation and requesting the quantities involved as determined by the defendant's engineers by cross-section measurements. On 184 December 11, 1939 plaintiff submitted its claim for the reclassification of 176,460 cubic yards which had been paid for under item 3 of its contract unit price schedule as stripping at 20 cents per cubic yard. Plaintiff claimed that this material should have been classified as trench excavation under item 11 at 35 cents per cubic yard.

The sand excavated from the several areas was determined to be unsuitable for embankment use and was wasted upstream in the reservoir area. However, substantial quantities of suitable material, which were excavated in the trench areas above the sand pockets, were used in the embankment. Defendant contends that the quantities used in the embankment were only about 2% of the aggregate and that none of it required separation. Plaintiff contends that a substantial quantity of suitable material excavated from above the sand pockets in the trench area was separated, and used in the embankment. Neither side has furnished actual measurements from which a quantity determination of suitable material could be made. Suitable materials overlay the sand about 2 to 8 feet on the right side of the river channel and 8 to 16 feet on the left side.

138. At a conference in August 1940 involving this claim, the contracting officer determined that plaintiff was entitled to trench excavation of sand involved in the cut-off trench from the left abutment to approximate axis station $7 + 36$ or trench station $16 + 75$. It was conceded that this area had been staked out for trench excavation immediately after the left side of the embankment area was stripped. Plaintiff was allowed reclassification for 29,701 cubic yards of material previously paid for as stripping. As a result of this determination, 29,523 cubic yards were reclassified as cut-off trench excavation in the final voucher and were paid for at 35 cents per cubic yard, and 178 cubic yards of this material was reclassified as rock excavation and paid under contract unit price item 12 at \$2 per cubic yard.

139. Plaintiff excavated approximately 48,277 cubic yards of sand from approximate cut-off trench stations $16 + 75$ to $19 + 00$ on the left side of the river channel, which was not reclassified. This sand excavation was not only in the cut-off trench areas, but extended upstream to the toe of the embankment and downstream beyond the axis of the dam. The secondary cut-off 185 trench, which was constructed across the river channel, intersected the axis of the dam at approximate station $7 + 50$, to the left of the river channel. Sand encountered in this area was exca-

vated from above the cut-off trenches and over the entire area between the primary and secondary cut-off trenches.

140. In his findings and report of December 29, 1942, the contracting officer awarded plaintiff \$1,279.95 by a reclassification of 8,533 cubic yards of sand excavation from the original trench in area (b) on the right side of the river channel. This allowance was confirmed by the Secretary of Interior in his decision dated July 7, 1943. As previously stated, plaintiff has not been paid anything upon this reclassification and award.

141. Plaintiff excavated sand and overlying suitable materials from its cut-off trenches and adjacent areas on the left side of Pine River for approximately 400 feet, referred to as area (a). This excavation was performed to a depth of about 40 feet below the original stripping line and amounted to approximately 77,978 cubic yards; all of which was first classified as stripping. The construction engineer later reclassified 29,701 cubic yards of this material as trench excavation, and plaintiff was paid for the difference in price in its final voucher. The remaining 48,277 cubic yards is claimed for reclassification. The unsuitable sand pocket was not encountered in this area until after trench slope stakes were set, and excavation of the trenches was in progress.

142. After the discovery of pervious sand to the right and left of the river channel, which extended upstream into the reservoir area, defendant's engineers decided to construct a secondary trench, about 100 feet downstream from the primary trench and closer to the axis of the dam. This secondary trench, about 1,300 feet in length, was constructed from a point about 800 feet to the right of the river channel, across the channel and about 200 feet beyond the left side of the channel. Sand excavation was performed from the entire area of both the primary and secondary trenches.

143. Plaintiff has been paid under Item 11 at 35 cents per cubic yard for all the excavation of cut-off trench performed below the level reached after the removal of the unsuitable material.

186 With payment at such price for the 8,533 cubic yards involved in the excavation of the cut-off trench between the river channel and the diversion channel, first dug and then abandoned, which yardage has been reclassified by the contracting officer, plaintiff will have been paid at 35 cents per cubic yard for all cut-off trench excavation actually performed as such.

It has also been paid at 35 cents per cubic yard for the material removed from the diversion channel as its dimensions are shown on the contract drawings.

This leaves in controversy 161,518 cubic yards of material removed from areas above and adjacent to the areas of cut-off trench and diversion channel. The operation involved in the removal of this material does not appear to come clearly within the definition of either stripping or trench excavation. The term "stripping"

would not normally be applied to the excavation of areas of such depth and magnitude requiring exploratory methods to determine their extent. On the other hand, such operation did not involve excavation within a confined space or trimming to slope lines as in trench excavation. The material for the most part was easily handled and a high percentage of it was wasted with a comparatively short haul. Excavation in the spillway upstream from station 15 + 00, requiring no separation, and borrow excavation appear comparable to this operation. Both carried a contract price of 23 cents per cubic yard.

If this price be applied, plaintiff is entitled to recover on this claim;

161,518 cubic yards \times \$0.03 or	\$4,845.54
8,533 cubic yards \times \$0.15 or	1,279.95
	<hr/> 6,125.49

Claim No. 27

For excavating boulders in stripping and cut-off trenches

144. Plaintiff's Claim 20 involved the reclassification of stripping to cut-off trench excavation. Cut-off trench excavation carried two classifications. Cut-off trench excavation, common, was payable under item 9 of the contract unit price schedule at 35 cents per cubic yard, and cut-off trench excavation, rock, was payable under

Item 10 at \$2 per cubic yard. Plaintiff's claim 27 is for 187 1,206 cubic yards of rock in excess of 1 cubic yard in volume which had been classified and paid for as stripping at 20 cents per cubic yard, less the 15 cents differential under claim No. 20, or the net difference of \$1.65 per cubic yard, amounting to \$1,989.90.

145. In his reclassification of some 29,701 cubic yards from stripping to cut-off trench excavation, the contracting officer reclassified and paid for approximately 178 cubic yards of it as rock excavation in the cut-off trench at \$2 per cubic yard. The remainder was reclassified as common excavation in trenches. The ratio of rock was .6 of one percent which plaintiff claims here on a total of 201,757 cubic yards (originally claimed for reclassification) amounting to 1,206 cubic yards.

146. Plaintiff did not submit any claim for rock classification in stripping until January 1940, after all this work had been performed. The contracting officer denied these claims and he was sustained by the Secretary of Interior upon appeal by plaintiff.

Claim No. 31

For excavating and backfilling below the top of walls downstream from station 15 + 00 in spillway

147. Plaintiff claims payment for excavation in the spillway beyond the theoretical lines of the 1939 slope stakes and below the top of the spillway walls, as well as the backfill required for the same. Plaintiff contends that the removal of loose boulders required excavation beyond the neat lines established by defendant's engineers and that it is entitled to payment to the most practical dimensions to which excavation was performed.

Plaintiff claims payment for 2,763 cubic yards of excavation, consisting of (a) 1,993 cubic yards of earth excavation that was separated for use in the embankment at 35 cents per cubic yard, amounting to \$697.55; and (b) 770 cubic yards of rock at 60 cents per cubic yard, amounting to \$462; also (c) backfill of 2,763 cubic yards at 50 cents per cubic yard, amounting to \$1,381.50; and (d) 2,763 cubic yards of earth borrow pit excavation at 23 cents per cubic yard, amounting to \$635.49, totaling \$3,176.54.

188 148. The contract specification provides in part:

41. *Classification of excavation.*—Except as otherwise provided in these specifications, all materials moved in required excavations for the dam and appurtenant works will be measured in excavation only, to the neat lines shown on the drawings or prescribed by the contracting officer, * * *

43. *Open-cut excavation, general.*—* * * That for any required excavation where, in the opinion of the contracting officer, the conditions warrant, the excavation will be measured for payment to the most practicable dimensions and lines as staked out or otherwise established by the contracting officer: * * * If at any point in common excavation, material is excavated beyond the neat lines required to receive the structure, the overexcavation shall be filled with selected materials, in layers not more than six inches thick, moistened and thoroughly compacted by tamping or rolling in a manner satisfactory to the contracting officer. It at any point in common excavation the natural foundation material is disturbed or loosened during the excavation process or otherwise, it shall be consolidated in a manner satisfactory to the contracting officer, or, where directed by the contracting officer, it shall be removed and replaced with selected material compacted to the satisfaction of the contracting officer. * * * Any and all excess excavation or overexcavation performed by the con-

tractor for any purpose or reason, except as may be ordered in writing by the contracting officer, and whether or not due to the fault of the contractor, shall be at the expense of the contractor. * * *

46. *Excavation for spillway.*—* * * All excavations shall be made to the lines, grades, and dimensions shown on the drawings or established by the contracting officer and in accordance with the provisions of paragraph 43. The contractor shall be entitled to no additional allowance above the unit bid in the schedule for excavation for spillway by reason of changes in the lines, grades, and slopes of required excavations, though changes in the quantities of excavation will be covered in the estimates. * * *

189 50. *Backfill about structures.*—* * * Material used for backfill will be measured in place about the structures and to the lines of the required backfill as established by the contracting officer. * * *

149: On April 11, 1939, defendant submitted to plaintiff by letter certain revised drawings involving slight changes in the spillway gate structure which necessitated some additional grading of the spillway below the gate structure. In May, 1939, the spillway channel was restaked for sloping.

Original drawings showed tile drains located adjacent to the back side of the cantilever wall and on top of the wall footing. The excavation was originally staked to lines one foot outside the neat line of the concrete. On May 15, 1939, revised drawings were submitted to plaintiff showing a change in the location of the drains to the outside edge of the wall footing. Additional excavation was performed to provide for the relocation of these drains. Order for changes No. 5, dated April 12, 1941, awarded plaintiff the lump sum of \$2,450 for this additional excavation. This order was not accepted by plaintiff because it involved an additional claim for gravel, and is now included herein under claim No. 5. Approximately 859 cubic yards of additional excavation was performed to permit the installation of these drains outside the wall footing.

Extra work order No. 4, dated April 6, 1940, provided for the removal, cleaning and relaying of substantially all of these 8-inch drain pipes for the lump sum of \$1,135, which was accepted by plaintiff and paid for. A very small portion of the overexcavation claimed here resulted from the removal and replacing of these drains.

Under Claims 7 and 8 herein, plaintiff claims compensation for

the installation of 4-inch tile drains along the outlet channel, one of which traversed the spillway channel. Plaintiff later connected this drain to the permanent 8-inch drain in the spillway, necessitating additional excavation of approximately 160 cubic yards of material which is a portion of the yardage involved herein.

Claims 33 and 37 are concerned with that portion of the spillway upstream from station 15 + 00, and are not involved with the yardage claimed here.

190 150. The excavation, spillway construction and backfill involved here were completed during 1939. By letter of March 13, 1940, plaintiff inquired of the construction engineer the basis of yardage allowances for the excavation and backfill in the downstream portion of the spillway. By letter of April 8, 1949, defendant's construction engineer advised plaintiff that measurements were based on slope stakes set at $1\frac{1}{2}$ to 1 above the top of the walls and 1 to 1 below the top of the walls except where rock was involved, in which case the slope was $\frac{1}{2}$ to 1; and that payment for all spillway excavation below the top of the walls was to actual excavated lines, except where the excavation extended beyond the 1939 theoretical slope, in which case payment was made to the 1939 theoretical slope.

It was established by the evidence in this case that payment for rock excavation was also on the basis of measurement on 1 to 1 slopes below the top of the walls, since the slope stakes had been set on a 1 to 1 slope. The existence of rock in this area was unknown until it was encountered during the excavation.

151. On June 26, 1940, plaintiff submitted to the construction engineer its claim for \$2,588.65 for additional 2,819 cubic yards of excavation, represented by 2,049 cubic yards of earth, which was separated and used in the embankment, at 35 cents per cubic yard, 770 cubic yards of rock at 60 cents per cubic yard and backfill of 2,819 cubic yards at 50 cents per cubic yard.

By letter of December 3, 1941, plaintiff revised its claim to \$3,176.54 after checking defendant's notes and cross sections upon which allowances were computed in the final voucher. The Government had deducted 2,763 cubic yards of earth borrow pit excavation to compensate for the backfill below the top of spillway walls which had been over-excavated. Plaintiff revised its claim to 1,993 cubic yards of earth excavation, 770 cubic yards of rock excavation and 2,763 cubic yards of backfill. Claim was also made for 2,763 cubic yards of earth borrow pit excavation at 23 cents per cubic yard, which had been deducted from yardage excavated by plaintiff.

191 Defendant admits that the overexcavation was separated and used in the embankment, which displaced a like amount of borrow material that was used in the backfill because of over-excavation; and, but for material used from overexcavation, plain-

tiff would have had to excavate 2,763 cubic yards of additional borrow pit material.

152. The contracting officer denied plaintiff any recovery upon its claim in his decision dated December 29, 1942. This report states in part:

7. * * * Payment has been made to the lines as prescribed by the contracting officer, and there is no basis under the specifications for the allowance of excavation to any other lines.

8. * * * The neat lines, as staked, were the lines of required backfill and, therefore, no payment can be made for backfill of overexcavation or for the borrow material used therefor.

The decision of the contracting officer was sustained by the Secretary of the Interior on July 7, 1943.

153. Plaintiff contends that excavation of the spillway channel below the top of the walls was made to the most practicable dimensions, and relies upon that provision in paragraph 43 of the specifications for payment of this excavation and the required backfill. Plaintiff has not submitted the specific yardage involved in the several areas where overexcavation occurred, although cross sections were filed as plaintiff's exhibits 14-A and 31-A in this case.

A ridge of rock extended across the spillway between stations 18 + 75 and 21 + 00. No one knew the rock existed in this area until it was encountered by excavation. The Government engineers staked the entire channel on a 1 to 1 slope below the top of the wall. Payment was actually made by measurement on this slope. Plaintiff found it impossible to excavate to neat lines in this area. After plaintiff excavated to what it believed were the required slopes, defendant's engineers directed the further removal of nests of boulders which might become hazardous to the workers engaged on the form work and wall construction below. Heavy rains which occurred after excavation washed out the fine materials and other groups of boulders had to be removed. Where rocks were firmly embedded, even though they protruded inside the plane of the slope, they were not required to be removed. A substantial portion of the overexcavation was involved in this area. However, the overexcavation of ledge rock was actually paid for on a slope plane of 1 to 1, and not $\frac{1}{2}$ to one as suggested in the construction engineer's letter of April 8, 1940, and upon which plaintiff computed its excess rock. The total rock yardage in overexcavation was only 275 cubic yards, and not 770 cubic yards. All boulders removed in excess of 1 cubic yard were measured separately and paid as rock excavation.

154. Defendant contends that a part of the overexcavation oc-

curred on the left side of the spillway channel between stations 15 + 30 and 25 + 50 where plaintiff constructed a hauling ramp. The Government allowed plaintiff some 2,232 cubic yards of overexcavation from above the top of the wall in this area, for the reason that defendant's engineers failed to remove the 1937 reference stakes which contributed to this error. The error in selecting the 1937 stake would contribute to overexcavating below the top of the wall and the construction of the ramp beyond the slope grade.

155. Approximately 160 cubic yards of overexcavation was involved between approximate stations 15 + 15 and 19 + 50 on the right side of the channel, for the connection of 4-inch drains involved in Claims 7 and 8. This excavation was necessary in order to connect the 4-inch drains with the permanent 8-inch drains in the spillway channel.

156. Plaintiff excavated approximately 859 cubic yards beyond the wall footings between stations 14 + 50 and 19 + 00 on the left side and 17 + 04 and 18 + 57 on the right side of the spillway channel in order to place the permanent tile drains outside the edge of the concrete footing, under order for changes No. 5. Plaintiff was awarded \$2,450 for this excavation and now claims this sum under Claim No. 5 herein, which defendant does not contest. The allowance under order for changes No. 5 was for excavation only, and does not obviate the necessity for backfilling this overexcavated area.

157. Plaintiff's overexcavation was separated and used in the embankment. Measurements for excavation were made in 25-foot cross-section areas. Yardage was calculated by defendant's engineers to actual lines, except where the excavation extended beyond the 1939 slope stakes. In such instances the yardage allowed was held to the absolute neat lines of the slope as staked.

The overexcavation involved herein was not due to carelessness or negligence on the part of plaintiff.

158. Plaintiff was not paid for any of the backfill for overexcavation back of the concrete walls, totaling 2,763 cubic yards. Defendant also deducted 2,763 cubic yards of earth borrow-pit excavation performed by plaintiff to compensate for the backfill of the overexcavation, although it concedes that a like quantity of materials from overexcavation were used in other embankment construction.

Plaintiff excavated 2,763 cubic yards of material in the spillway channel for which it has not been paid. Approximately 859 cubic yards are included in Claim 5. The remaining 1,904 cubic yards consisted of 1,629 cubic yards of earth excavation, with a value of 35 cents per cubic yard under Item 7 of the contract unit-

price schedule, and 275 yards of rock excavation having a value of 60 cents per cubic yard under Item 8 of this schedule, or a total value of \$735.15.

The contract value of backfill behind the spillway walls is 50 cents per cubic yard under Item 17 of the unit-price schedule, or \$1,381.50 for 2,763 cubic yards.

The value of 2,763 cubic yards of earth borrow-pit excavation at 23 cents per cubic yard under Item 14 of the contract unit price schedule is \$635.49.

The total value of performance, not otherwise claimed herein, is \$2,752.14. Of this amount the sum of \$743.87 represents payment at 50 cents per cubic yard for backfill and 23 cents per cubic yard for borrow for the 1,019 cubic yards of overexcavation referred to above in Findings Nos. 155 and 156.

Claim No. 33

Extra costs allegedly caused by change in plans for extra width in the spillway between stations 6 + 90 and 12 + 12

159. Paragraph 30 of the contract specification relates to changes in location and plans. Paragraphs 43 and 46, parts of which are quoted under Claim 31 herein, also relate to the change involved here.

194 On March 30, 1940, the construction engineer received from the Chief Engineer in Denver, Colorado, certain drawings showing the construction details for the spillway between stations 6 + 90 and 12 + 12, an area of about 522 feet in length. These drawings required the widening of the bottom of the spillway to accommodate a wider base for the cantilever wall, and to permit the placing of tile drains outside the edge of this wall footing. They also required slightly greater depth for the wall footing.

160. As soon as these drawings were received they were presented to plaintiff's superintendent Stewart for examination. Upon examination Stewart advised the construction engineer that the changes indicated would involve extra costs for which plaintiff should be compensated. Thereupon the following telegram was transmitted to plaintiff, dated April 2, 1940:

Spillway plans call for extra width between stations 6 + 90 and 12 + 12 and agreed price for this and tile drain above station 14 + 50 must be obtained from you in advance of performance of work.

On April 4th a set of the revised drawings were furnished plaintiff. On the same day plaintiff submitted its proposal of \$1 per cubic yard for additional earth excavation, \$5 per cubic yard for

the rock and \$2 per linear foot for placing the tile drains; with the provision that should these rates exceed its costs plus 10 percent for overhead and profit, then plaintiff would reduce its rates accordingly.

The wall footings were excavated to such depths that no additional trenching was required for placing tile drains outside the edges of the footings, and plaintiff's claim herein does not involve extra costs for the placing of tile.

161. Plaintiff's proposal was declined, and plaintiff was directed to perform the work as changed. Plaintiff objected to performing the work at contract unit rates, and advised the construction engineer by letter of April 29, 1940, that it would keep costs of all additional work caused by the change, and asked that the Government keep similar costs as they were incurred. By letter of May 3rd, 1940, the construction engineer accepted plaintiff's protest for record under paragraph 14 of the specifications.

195 162. Plaintiff contended that the spillway excavation in the area involving the change had been excavated substantially to grade, except where rock was encountered near the gate structure. On April 3, 1940, defendant's engineers surveyed the area to be widened and determined that additional excavation near the toe of the slope and the bottom of the channel was approximately 4,272 cubic yards, calculated on a slope of 1 to 1 grade as originally staked by the defendant; of which 2,729 cubic yards was calculated as rock excavation and 1,543 cubic yards as earth excavation. The result of these cross-sections was shown to Mr. Wunderlich, who was at the site at the time, and it was pointed out to him that considerable original work remained to be done, and that the widening operations would not involve much greater yardage.

163. The construction engineer determined that the material in this area was of such character that it would be retained at almost a vertical angle. The lower portion of the banks were re-staked at a slope of $\frac{1}{4}$ to 1, and plaintiff was directed to widen the channel on this grade.

In order to excavate the earth at this grade plaintiff employed a bulldozer and tractor, and a grader with the blade set almost vertically against the slope to be cut away. This unit would cut 3 or 4 inches with each pass, and the operation was continued until the banks were cut back to the desired lines. The material cut down in this fashion was thereafter removed by carryall scrapers and trucks. By this method the bank was left very steep, but it did not break loose. Had the change been made before the channel was substantially excavated, most of the widening cut could have been made with the power shovel with much greater progress.

Plaintiff removed the rock in a small area which required widen-

ing by the same methods and tools regularly employed for this work. Compressors and jackhammers were used.

164. The excavation for which plaintiff was paid after the widening change and the restaking of the grade on a $\frac{1}{4}$ to 1 slope was 4,419.5 cubic yards. It included 1,687 cubic yards of earth excavation at 23 cents per cubic yard and 2,732.5 cubic yards of rock at 60 cents per cubic yard, totaling \$2,027.51. The net increase
196 in yardage was 144 cubic yards of earth and 3.5 cubic yards of rock having a contract value of \$35.22, for which plaintiff received payment.

The additional yardage remaining to be excavated on the original slope of 1 to 1 was not all removed because of the change in the slope to $\frac{1}{4}$ to 1 when the widening change was ordered. The yardage involved in the widening operation was not separately determined, and plaintiff was paid only for actual excavation cross-sectioned on the new slope as restaked.

165. On December 3, 1941, plaintiff submitted its extra cost of the additional work involved in widening the spillway as directed by the construction engineer in the sum of \$1,360.72. This claim was denied by the contracting officer in his decision of December 29, 1942, on the ground that the Government had a right to change the location and plans of the work and that plaintiff had been paid the contract unit price of the increase in yardage involved. His decision was sustained by the Secretary of the Interior upon appeal by plaintiff.

166. Plaintiff's costs were increased by the change in width of the spillway channel between stations 6 + 90 and 12 + 12. As a result of the concurrent change in the slope of the excavation remaining as originally staked, part of this yardage was net required to be excavated, and plaintiff's net increase in yardage had a contract value of only \$35.22 which plaintiff received.

Plaintiff's costs of the additional widening operations, with allowances for equipment used at the maximum use rate determined in Finding 17 herein, was \$1,009.29. Its recovery upon net increased yardage involved was \$35.22. Plaintiff's excess costs were \$974.07.

Claim No. 34

Cost of re-excavating and backfilling cut-off trench for cut-off wall at junction with spillway footing, at right abutment

167. The cut-off wall on the right abutment was specified in contract drawing 191-D-46 to join the base of the concrete gate structure of the spillway. Both the cut-off wall and the spillway gate structure were to be constructed on bedrock.

197 In 1938 the cut-off trench was staked by defendant's engineers for excavation to the junction with the spillway. It

was excavated by plaintiff as staked by defendant. Plaintiff's concrete subcontractor was to install the concrete cut-off wall and the spillway concrete work.

The construction engineer directed plaintiff to terminate the cut-off wall approximately $11\frac{1}{2}$ feet short of its point of junction with the base of the spillway structure, because of contemplated changes in the alignment of the spillway.

168. Plaintiff planned to complete the cut-off wall on the right abutment in 1938, and would have completed it except for defendant's order to terminate the wall before completion. Plaintiff's progress program scheduled the upstream construction of the spillway and gate structure in 1940.

It was defendant's practice to prepare and furnish to plaintiff detail drawings affecting the various features of the work in harmony with plaintiff's progress schedule, and to adopt such changes as were found necessary to fit conditions disclosed by the excavation. It was believed that a change in alignment of the spillway structure would be necessary. For this reason defendant's engineers stopped the cut-off wall construction short of its junction with the spillway foundation structure as then designed.

The gate structure was ultimately moved downstream approximately 30 feet from the originally designated location, but the alignment was not changed, and the cut-off wall was later extended to the junction with the spillway foundation substantially the same distance as first indicated.

169. Since the spillway foundation was not planned until 1940, plaintiff decided to refill the open trench to avoid hazard and obstruction to its other construction operations, and to prevent the accumulation of a deep pool from surface drainage. Defendant's engineers required that the refill be compacted in like manner as other embankment in the cut-off trench. Plaintiff was paid for this excavation of the cut-off trench and embankment fill at the contract rates applicable to other portions of the cut-off trench where the cut-off wall had been constructed. Plaintiff knew that this portion of the cut-off trench would have to be re-excavated for the completion of the cut-off wall; and defendant also knew
198 this, although payment was made in full for the work performed by plaintiff, as directed.

170. The detail plans for the gate structure had not been completed until late in 1939. All excavation for the upstream channel of the spillway had been completed in May 1940. In June 1940, defendant staked that portion of the cut-off trench for the completion of the cut-off wall to the junction with the spillway foundation on a very steep slope for re-excavation. The area was about 20 feet long, 20 to 30 feet deep and about 15 feet wide at the bottom. The compacted material was difficult to excavate.

This re-excavation was performed in June 1940, and the cut-off wall was completed in July 1940. The backfill was performed from July 8 to 18, 1940. Plaintiff orally protested performing the backfill at the rate of embankment fill, Item 19 of its contract unit price schedule, at 5 cents per cubic yard, because of the confined area and the necessary use of hand tamping tools for much of this work. Backfill about structures was payable at 50 cents per cubic yard, under Item 17.

The specification provides in part:

50. *Backfill about structures.*—Backfill is defined as excavation refill or embankment material that is required to be placed under these specifications and which can not be deposited around the structures or in adjacent embankments until the structures are completed: *Provided*, That embankment material surrounding or abutting the concrete cut-off walls, spillway structure, trash-rack structure, outlet conduit, spiral-stairway shaft, and other structures or parts of structures against which compacted dam embankment is placed after the construction of the structure, will be classified as embankment and will not be paid for as backfill.

171. By letter of July 10, 1940, plaintiff protested performing the work at regular contract rates, claiming this work was performed under changed conditions for which it would claim its costs plus 10 percent under paragraph 10 of the specifications. Plaintiff was not paid anything for the re-excavation nor for the backfilling of the area involved herein.

On December 3, 1941, after allowances had been calculated 199 by defendant for its final payment voucher, plaintiff submitted its claim for re-excavating and re-backfilling the cut-off trench at its junction with the spillway structure, on the basis of its cost plus 10 percent for overhead and profit, in the sum of \$997.92.

In his decision of December 29, 1942, the contracting officer denied plaintiff any compensation for the re-excavating and re-backfilling of that portion of the cut-off trench involved herein. The Secretary of Interior confirmed this decision July 7, 1943.

The contracting officer held that plaintiff could be paid but once for the excavating and fill, and that plaintiff knew at the time the cut-off wall was terminated that it would be necessary to re-excavate and re-backfill the area in order to complete the cut-off wall; and that plaintiff's superintendent was told at the time the fill was first placed that it would be paid only once.

172. Defendant contends that plaintiff's superintendent was advised that the work would be paid for only once. Plaintiff contends that defendant's construction engineer agreed to pay for the

re-excavating and re-backfilling and that its protest was for backfilling at embankment rate of 5 cents per cubic yard applicable to cut-off trenches.

Both plaintiff and defendant knew that the trench would have to be re-excavated to complete the cut-off wall when work was stopped on the cut-off wall short of its junction with the spillway structure foundation, and embankment was placed in the open trench.

The volume involved was approximately 400 to 500 cubic yards upon a slope of $\frac{1}{2}$ to 1. Plaintiff's cost of re-excavating and re-backfilling this area was \$610.61, based upon rental of equipment at maximum use during 1940, as set out under Claim 17 herein, as follows:

Labor.....	\$230.49
Payroll insurance and taxes.....	22.70
Equipment rental.....	301.91
Ten percent allowance for superintendence, general expense, and profit.....	55.51
Total.....	610.61

200

Claim No. 35

Claim for additional rolling of embankment ordered by the defendant

173. The specifications provide in part as follows:

55. *Embankment construction, general.*—

(c) *Placing.* * * * No stones having maximum dimensions of more than five inches shall be placed in the earth-fill portion of the embankment. Should stones of such size be found in otherwise approved earth-fill embankment materials, they shall be removed by the contractor either at the site of excavation or after transporting to the embankment, but prior to rolling and compacting the materials in the embankment. * * * The mixture of clay, sand, and gravel shall be placed in the earth embankment in contiguous, approximately horizontal layers not more than six inches in thickness after rolling as herein specified. * * *

(d) *Moisture control.*—Prior to and during rolling the material in each layer of the earth fill shall have the optimum practicable moisture content required for compaction purposes, as

determined by the contracting officer, and the moisture content shall be uniform throughout the layer. . . .

(f) *Rolling*.—When each layer of material has been conditioned to have the optimum practical moisture content required for compaction purposes, as provided in subparagraph (d), it shall be compacted by passing the tamping roller, as specified above, over it 12 times. If the moisture content is greater or less than the optimum for compaction, the rolling shall not proceed except with the specific approval of the contracting officer, and, in that event, additional rolling shall be done, as directed by the contracting officer, to obtain the required compaction, and no adjustment in price will be made therefor. If, with the optimum moisture content, it is found desirable to roll each six-inch layer more or less than 12 times to obtain the desired compaction, the number of rollings shall be changed accordingly, as directed by the contracting officer, and adjustment will be made in the unit price bid for compacted embankments in the amount of $2\frac{5}{100}$ cents per cubic yard for each additional or less number of rollings required.

201 174. Plaintiff claims additional rolling at the price provided as follows:

12 additional rollings:	
2,652.7 cubic yards at 3 cents per c. y.....	\$79.58
6 additional rollings:	
94,749.9 cubic yards at $1\frac{1}{2}$ cents per c. y.....	1,421.25
Total	1,500.83

Plaintiff's claim covers 149 additional rollings ordered by defendant's engineers during the period from May 2d to November 4th, 1940. Plaintiff was not paid for any additional rolling of any part of the embankment, and no deduction was made for rolling any portion less than 12 times.

175. Defendant determined, by laboratory tests for optimum moisture; when each layer of embankment was ready for rolling, after it was spread to the proper depth. Defendant contends that in actual practice the plaintiff did not wait to begin rolling a layer of embankment until the defendant had tested such lift for optimum moisture content; and that 12 rollings were still required after tests disclosed that the materials were unsuitable when rolling was started.

After rolling had been completed the defendant would test each lift for density. In the event the compaction was 2 percent or more

under the maximum density required, additional rolling would be ordered, and if the optimum moisture content was found deficient additional sprinkling was also required.

176. During the period of plaintiff's claim the Government records show that additional rollings were ordered 194 times. In 90 out of the 194 times additional rollings were ordered, tests applied after rolling showed variations in moisture of 1 percent above or below optimum moisture. The defendant contends that failure to attain the required density could have been caused by one or a combination of things, including oversized stones left in the embankment fill, lifts exceeding the six-inch maximum, broken or worn feet on the rollers, a deficiency of ballast in the rollers, improper compaction at the junction between material tamped and material rolled or failure to complete the required number of rollings.

202. The inspectors' reports of current operations show frequent references to the occurrence of conditions set out above, but defendant is unable to connect the necessity for any particular additional rolling claimed by plaintiff with such reports. Defendant is unable to verify or contravert the yardage claimed by plaintiff.

177. Plaintiff contends that rolling of embankment was done when and as directed by defendant's engineers, and only after tests for moisture content had been completed.

There were a number of times that Government inspectors had found insufficient ballast in the rollers. The water had leaked out and was not immediately discovered. Also plaintiff's roller feet became badly worn and the feet were required to be replaced from time to time.

During 1940 all of the embankment material for Zones 1 and 3 was taken from borrow pit No. 2 and was separated. The construction engineer directed plaintiff to spread the bars on its separating screen so that more stones under 5-inch maximum would be admitted with the embankment materials; and that plaintiff would not be paid for any excess cobbles which were not required in the cobble fill as a result of the separation of materials from borrow pit No. 2. (See Claim 17 herein.)

The excessive quantities of cobbles, even under 5 inches in diameter, caused wear and tear on plaintiff's rolling equipment, and would tend to reduce compaction by the rollers. All of these materials were screened after June 21, 1940. Materials excavated from borrow pit No. 2 from April 22 to June 21, 1940 were separated by rake-dozers on the embankment. Plaintiff's claims show a similar ratio of additional rollings ordered after June 22d, when materials were screened, as before, when they were separated by rake-dozers. No stones in excess of 5 inches would be admitted through the screen.

178. Plaintiff understood that the additional rolling would be paid for under the provisions of the specifications. Upon the receipt of its final voucher, plaintiff determined that no allowance was contained in it for additional rolling. On December 3, 1941, plaintiff submitted its claim for \$1,500.83, which was denied by the contracting officer in his decision of December 29, 1942, 203 on the ground that plaintiff failed to make its claim in time; since rolling of the embankment had been completed in July 1941; and that it was not possible to verify the yardage involved from data submitted. The contracting officer's decision was sustained by the Secretary of the Interior.

179. Plaintiff's claim is supported by details of sections, widths and stations upon the embankment where additional rolling was performed. Defendant does not controvert the correctness of yardage involved, or the number of rollings performed. Plaintiff claims yardage involved in only 149 additional rollings of a total of 194 ordered by defendant and performed by plaintiff during 1940. The rollings performed as claimed had a contract value of \$1,500.83.

Claim No. 37

For overexcavation upstream from station 15+00 of the spillway and backfill below the top of walls

180. Plaintiff claims that it performed 1,657 cubic yards of rock excavation between stations 1+75 and 15+00 of the spillway, of which 593 cubic yards were below the top of the walls where backfill was required; and that it was paid for neither the overexcavation nor the backfill. In addition there were deducted 593 cubic yards of borrow pit material at 23 cents per cubic yard which was used in the backfill.

Contract specifications quoted under Claim 31 applies in like manner and effect to Claim 37. Paragraph 41, there quoted in part, states further, in part:

On written request of the contractor, made within 10 days after the receipt of any monthly estimate, a statement of the quantities and classifications between successive stations, or in otherwise designated locations, included in said estimate will be furnished to the contractor within 10 days after the receipt of such request. The statement will be considered as satisfactory to the contractor unless specific written objections thereto with reasons therefore are filed with the contracting officer within 10 days after receipt of said statement by the contractor or the contractor's representative on the work. Failure to file such written objections with reasons therefor within said 10 days shall be considered a waiver of all claims based

204 on alleged erroneous estimates of quantities or classification of materials for the work covered by such statement.

181. The upstream portion of the spillway was first staked for excavation about May, 1938. Only rough excavation was performed during that year. Due to construction changes, it was re-staked about May 1939, but this did not affect that portion of the excavation previously performed. Finally in April 1940, after the channel was largely completed a portion of the upstream channel was again staked for widening the base of the channel to permit additional changes in the concrete work. (See Claim 33.)

The final stakes provided for a very steep slope, about $\frac{1}{4}$ to 1, but extended only about one-third up the banks of the spillway, and covered less than one-half the length of the channel upstream from station 15+00. The evidence does not show whether the yardage involved herein represented excavation beyond the final stakes set in April 1940, or beyond the 1939 slope stakes. Defendant's assistant engineer Walton could not determine how the quantities claimed were computed.

182. Plaintiff contends that it was impossible to shoot the rock and remove it to exact neat lines established by the Government's slope stakes.

The area involving rock was blasted. It contained seams which broke back beyond the slope lines, and much of it came loose in blocks.

The only written complaint submitted by plaintiff was on September 20, 1940, when a cavedown occurred during the construction of the concrete walls, causing hazard to the workers employed in this work. Plaintiff was directed to remove the loose rock, which was estimated by the construction engineer to be approximately 10 cubic yards.

From time to time plaintiff had been directed to remove rock that had been loosened by other excavation and blasting, regardless of whether it was beyond the neat lines established by slope stakes in this area.

183. After its engineer had checked the cross-section for the final voucher, plaintiff submitted its claim on December 3, 1941, for \$1,427.09. This claim was for 1,657 cubic yards of rock excavation, 593 cubic yards of backfill and 593 yards of borrow pit excavation which had been deducted by defendant because of excess excavation below the top of the walls, requiring the additional backfill.

Plaintiff's claim was denied by the contracting officer December 29, 1942, on the ground that its claim was not submitted within the time specified in the contract, and for the reason that the contract precluded payment for overexcavation, and that the most practical

dimensions were found to be the neat slope lines established. His decision was sustained by the Secretary of the Interior upon appeal by plaintiff.

184. Defendant's engineer Walton stated in his testimony, page 2145, that no payment was made for overexcavation, backfill of overexcavation or borrow pit excavation required for this backfill. Defendant's proof is that plaintiff's overexcavation below the top of the spillway walls was only 301 cubic yards of rock between stations 5 + 29 and 6 + 75; that overexcavation of earth between stations 6 + 75 and 15 + 00 was 292 cubic yards, of which 129 cubic yards were removed by plaintiff for its own benefit in constructing a haul road ramp, leaving net overexcavation of earth only 163 cubic yards, and a total overexcavation, below the top of the walls, of 464 cubic yards. This work was completed in 1940.

Plaintiff was allowed and paid for 464 cubic yards of backfill in its September 1941-voucher under Item 17 of its unit price schedule at 50 cents per cubic yard.

185. Defendant was unable to determine the overexcavation of yardage above the top of the walls. However, the allowance of 1,946 cubic yards of rock excavation in excess of the reclassified common excavation in the spillway upstream from station 15 + 00 in the September 1941 voucher appears to cover Claim 37 herein. No overexcavation in this area is found which has not already been paid for.

186. Defendant deducted from plaintiff's September 1941 voucher 593 cubic yards of plaintiff's borrow pit excavation which was required for backfilling overexcavation. The overexcavated materials were used in the embankment and displaced a like volume of borrow pit excavation. Deductions from borrow pit excavation of 593 cubic yards had a contract value of 23 cents per cubic yard, or \$136.39.

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Claim No. 41

Extra cost of unwatering gate chamber and concreting gate plug

187. On January 9, 1941, the construction engineer submitted to plaintiff order for changes No. 4, dated December 30, 1940, involving changes in the outlet works. The principal change was a provision of a weir wall at the lower end of the outlet-works open channel, for which compensation was provided as follows:

Additional cost of unwatering and concreting gate plug and all other additional cost arising from the changes, at a lump sum payment of \$500.00.

Plaintiff declined to accept the above order for payment, believing it might prejudice its subcontractor's claims involving the outlet works.

The above order was revised December 30, 1941, to read:

Additional cost of unwatering and concreting gate plug because of the changes, at a lump sum payment of \$500.00.

Payment was not made on the revised order because plaintiff's final settlement voucher had been completed in October 1941.

188. In his decision of December 29, 1942, the contracting officer affirmed the award of \$500 as an equitable adjustment for extra work involved in the foregoing changes in the outlet works. This award is fair and reasonable. Plaintiff now claims the \$500 awarded by the contracting officer. Defendant does not contest this claim.

CONCLUSION OF LAW

Upon the foregoing special findings of fact, which are made a part of the judgment herein, the court concludes as a matter of law that the plaintiff is entitled to recover \$172,302.23.

It is therefore adjudged and ordered that the plaintiff recover of and from the United States the sum of one hundred seventy-two thousand three hundred two dollars and twenty-three cents (\$172,302.23).

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OPINION

MADDEN, *Judge*, delivered the opinion of the Court:

The plaintiff is a partnership engaged in the construction business. On March 14, 1938, it made a contract with the United States, which acted through the Bureau of Reclamation of the Department of the Interior, by which it agreed to construct the Vallecito Dam on the Pine River in southern Colorado. It was to be paid unit prices for most items of the work, and the estimated total price of the project was \$2,115,870.

The site of the dam was about 7,550 feet above sea level. It was to be an earth-filled dam about 4,000 feet long at the crest, 600 feet wide at the base, and with a maximum height of about 125 feet. The embankment was to consist of three zones. Zone 1, the upstream zone, and Zone 3, the downstream zone, were to be constructed of pervious and semi-pervious materials, i. e. rock, gravel and cobble stones; Zone 2, in the center, was to contain only impervious material, i. e. earth and only such stones as could be effectively sealed in the earth, leaving no voids. The face of the upstream slope was to be covered with three feet of large stones, riprap. The downstream slope of the dam was to be covered with cobble stones, with a cobble-slurried gravel fill at the downstream toe.

In constructing the dam a deep trench, called a cut-off trench, was to be dug under the place where Zone 2 of the dam was to be located, which trench was to be tamped full of impervious material.

to prevent the seepage of water under Zone 2. At the ends of this trench, at each abutment of the dam, was to be built a concrete cut-off wall, placed on bed-rock. The earth, gravel, and rock for the embankment were to be obtained from the required excavation and from borrow pits, except that the riprap stones were to be obtained from a designated rock quarry.

The normal flow of water out of the reservoir created by the dam was to be through a twin-barrelled concrete conduit through the embankment at the lower part of the right abutment. A control house for the control of the gates of this conduit was to be built on the crest of the dam. The flow through the conduit was to be emptied into an open channel, called the outlet channel, which was to be lined with concrete at the bottom. The outlet channel was to empty, in turn into the spillway channel, at a point about 200 feet downstream from the dam. The spillway channel was to start from a point at the top of the dam, near the right abutment, and to carry the overflow of the reservoir in flood times. It was also to be lined with concrete on the bottom and was to extend about 2,800 feet downstream where it was to empty into the stilling basin, which in turn would overflow into the river. Gates to control the flow into the spillway channel were to be placed at its upper end.

The contract completion date was December 18, 1941. The work was in fact completed in October 1941. Although relations between the representatives of the plaintiff and of the Government were cordial and cooperative during the performance of the contract, differences of opinion as to what was required of the parties by the contract resulted in the filing by the plaintiff with the contracting officer of a large number of claims. Some 43 claims were excepted from the otherwise final settlement made for the work. The contracting officer thereafter, on December 29, 1942, made his decision on the claims. The plaintiff appealed to the head of the department, the Secretary of the Interior, from the parts of the contracting officer's decision which were adverse. The Secretary of the Interior affirmed the contracting officer's decision in all respects.

The plaintiff, in its petition in this suit, used the same numbers for its claims which it had used in the proceedings in the department. It did not, however, include some of the claims in this suit which it had urged upon the department. Some other claims which it included in its petition it has now abandoned, since receiving our Commissioner's report. The numbering of the claims in our findings and opinion is, therefore, not consecutive, there being some numbers missing in the sequence.

As to certain of the claims, the findings of the contracting officer were favorable to the plaintiff and the plaintiff is satisfied with the

amounts awarded. Those amounts have not been paid, and the plaintiff is entitled to a judgment for those amounts. Those claims are as follows: No. 5, \$2,450; No. 13, \$4,125; No. 18, \$466.40; and No. 41, \$500.

As to the contested claims, the Government urges that the departmental action was final and binding upon the plaintiff, under the terms of its contract. The pertinent provisions of the contract are Article 15 of the contract, relating to Disputes, and Paragraph 14 of the specifications, relating to Protests. We quote these provisions in a footnote.¹ As to most of the claims, we have found that the plaintiff's protests were oral. The Government seems to urge that since they were not written, they were ineffective. But Paragraph 14 does not say that a contractor's protests and requests for written instructions must be in writing, and we do not construe it to so require. The contracting officer did not, as Paragraph 14 provides, respond to the plaintiff's protests and requests for written instructions by furnishing such instructions. He refused to furnish them, saying that the contract required what he was demanding of the plaintiff. The plaintiff performed the work demanded, and did not,

¹ Article 15. *Disputes*.—Except as otherwise specifically provided in this contract, all disputes concerning question of fact arising under this contract shall be decided by the contracting officer subject to written appeal by the contractor within 30 days to the head of the department concerned or his duly authorized representative, whose decision shall be final and conclusive upon the parties thereto. In the meantime the contractor shall diligently proceed with the work as directed.

The cited paragraph of the specifications is as follows:

14. *Protests*.—If the contractor considers any work demanded of him to be outside the requirements of the contract, or considers any record or ruling of the contracting officer or of the inspectors to be unfair, he shall immediately upon such work being demanded or such record or ruling being made, ask for written instructions or decision, whereupon he shall proceed without delay to perform the work or to conform to the record or ruling, and, within 10 days after date of receipt of the written instructions or decision, he shall file a written protest with the contracting officer, stating clearly and in detail the basis of his objections. Except for such protests or objections as are made of record in the manner herein specified and within the time limit stated, the records, rulings, instructions, or decisions of the contracting officer shall be final and conclusive. Instructions and/or decisions of the contracting officer contained in letters transmitting drawings to the contractors shall be considered as written instructions or decisions subject to protest or objections as herein provided.

within 10 days, file written protests with the contracting officer. We think that it was not required to do so and lost no rights by not doing so. The Government was in default so far as the specified procedural steps were concerned, and has no right to complain of the plaintiff's default.

210 Paragraph 14 of the specifications provides no finality of departmental decision in circumstances such as we have here. Indeed, finality is almost expressly excluded by the provision that the contracting officer's decision shall be final except where protests are made and followed up in the specified manner. Since the plaintiff did protest, and the Government failed to respond with written instructions, the plaintiff is entitled to whatever rights it would have had if its protests had been followed by the rest of the specified procedure. Its rights, then, were not determined by any departmental decision agreed to by its accepting paragraph 14 of the specifications.

As we have said, the plaintiff did file its claims with the contracting officer and appealed that officer's adverse decisions to the head of the department, who affirmed the decisions. Those steps were the steps described in Article 15 of the contract, which we have quoted. Were they taken because Article 15 of the contract was applicable, or were they taken only as a hopeful avenue to possible relief? In the case of *United States v. Moorman*, 338 U. S. 457, the Supreme Court held that paragraph 2-16 of the specifications there involved stood on its own feet, and that this court's decision making it subject to Article 15 of the contract, 113 C. Cls. 115 at 179 was erroneous. Paragraph 2-16 in the *Moorman* case covered the same factual situations as paragraph 14 in the instant case. It said:

If the contractor considers any work demanded of him to be outside the requirements of the contract, or if he considers any action or ruling of the contracting officer or of the inspectors to be unfair, the contractor shall etc.

But it went on to provide for a decision by the contracting officer and an appeal, if desired, to the head of the department, whose decision should be final.

The Supreme Court said in the *Moorman* case that the parties had a reason for inserting paragraph 2-16 in the specifications, the reason being their desire to escape from the "oft repeated conclusion" of this court that questions of "interpretation" of contracts are not questions of fact. Paragraph 2-16 on its face made all questions covered by it subject to final departmental
211 decision, whether they were questions of fact or law. The provision in Article 15 of the contract for final departmental decisions only on questions of fact was held to place no restriction upon the breadth of paragraph 2-16 of the specifications.

If, in the instant case, the provisions of paragraph 14 of the specifications stand on their own feet, and remove the factual situations covered by the paragraph from the coverage of Article 15 of the contract, then there is, in the factual situation which we have before us, no provision for any appeal to the head of the department, and no provision for finality of the decision of anyone. Indeed there is no provision that the contracting officer shall make any decision, after he has received the written protest of the contractor, "stating clearly and in detail the basis of his objections". If that is all there is to the contract, of course the plaintiff has a right to assert in court that the contract was breached by the government since the contract gives him no other relief and provides for no departmental decision, final or otherwise.

We would suppose that paragraph 14 was a piece of careless writing by some representative of the Government and that the writer probably had a vague intention that the gaps left in his writing should be filled in by the general provisions of Article 15. We might, in violation of at least two canons of interpretation, (1) that an ambiguity in a contract should be resolved against the party who wrote the contract and (2) that the intention of parties to submit their contractual disputes to final determination outside the courts should be made manifest by plain language. *Mercantile Trust Co. v. Hensey*, 205 U. S. 298, 309, cited with approval in the *Moorman case, supra*, relieve the Government of the burden of its careless drafting, but in view of the decision in the *Moorman case, supra*, we leave the question undecided. For reasons which we will now state, we have concluded that, even if we apply the provisions of Article 15 to the claims before us, the plaintiff is still entitled to be heard upon them.

Article 15, which we have quoted, *supra*, provides for finality of departmental decision only with regard to "all disputes
212 concerning questions of fact arising under this contract."

In the *Moorman case, supra*, the Government apparently urged that the question there presented of interpretation of the language of the contract was a question of fact and that, therefore, even if Article 15 was applicable, the departmental decision was final. The court said:

But while there is much to be said for the argument that the "interpretation" here presents a question of fact, we need not consider that argument. For a conclusion that the question here is one of law cannot remove the controversy from the ambit of par. 2-16 of the specifications.

In view of this observation of the Supreme Court, we have re-examined the doctrine heretofore applied by this court to this problem.

We are, of course, aware that questions of the interpretation of written documents are not, speaking with analytical accuracy, in most cases questions of law in the sense that a lawyer or a judge has the special skill needed to answer them. They may be questions of agriculture, or engineering, or finance, or medicine, or law. In the division of judicial functions between the judge and the lay jury which only by accident would have the requisite skill in a particular case, the judge reserved this function to himself, presumably as being more competent than the jury. And judges and lawyers began to call the questions "questions of law," as a short way of saying that they should be decided by the judge. This method of expression, though analytically inaccurate was, so far as we know, quite universal. All the courts, including the Supreme Court of the United States, used it, and applied it with serious consequences. *Hamilton v. Liverpool, London, and Globe Insurance Co.*, 136 U. S. 242, 255; *Bliven, et al. v. New England Screw Co.*, 23 How. 420, 433; *Turner, et al. v. Yates*, 16 How. 14, 23. Where appellate courts have had jurisdiction to review questions of law but not questions of fact, they have held that they could review questions as to the interpretation of contracts. See *United States v. E. J. Biggs Construction Co.*, 116 Fed. 2d 768, 770. Similar statements and decisions were early made by this Court with reference to the finality of the decisions of a designated officer in problems arising in government contracts. *Lyons v. United States*, 30 C. Cls. 352, 365; *Collins and Farwell v. United States*, 34 C. Cls. 294, 332. Other Federal Courts held likewise. *Lewis, et al. v. Chicago, S. F. & C. Ry. Co.*, 49 F. 708, 710, 713; *King Iron Bridge & Manufacturing Co. v. City of St. Louis*, 43 F. 768. The Government has cited us no authority to the contrary.

In view of the unanimity of statement by courts that questions of the interpretation of written documents were "questions of law" the plaintiff urges that the representatives of the Government, and of contractors, who adopted Standard Form 23 which included Article 15, chose the language there used in the light of the then universal usage of the courts, and hence did not mean to include questions of the interpretation of written contracts within the "questions of fact" which were made subject to final departmental decision. This court and other courts dealing with the question have interpreted Article 15 as the plaintiff would have it interpreted. *Albina Marine Iron Works, Inc. v. United States*, 79 C. Cls. 714, 722; *Davis, et al. Trustees v. United States*, 82 C. Cls. 334, 346-347; *Rust Engineering Co. v. United States*, 86 C. Cls. 461, 477; *Schmoll, Assignee v. United States*, 91 C. Cls. 1, 33; *Callahan Construction Co. v. United States*, 91 C. Cls. 538, 616-617; *Ruff v. United States*, 96 C. Cls. 148, 165; *B-W Construction Company v. United States*, 97 C. Cls. 92, 118-119; *John McShain, Inc. v. United States*, 97 C. Cls. 281, 295; *Gerhardt F. Meyne Co. v. United States*, 110 C.

Cls. 527, 548. Other Federal Courts have given the same interpretation to this standard Government contract provision. *General Steel Products Corporation v. United States*, 36 F. Supp. 498, 502; *Lundstrom v. United States*, 53 F. 2d 709, 711. See also *Central Nebraska Public Power and Irrigation District v. Tobin Quarries*, 157 F. 2d 482, 486.

Of greater significance, perhaps, is the fact that the Government itself, through its Boards of Contract Appeals set up in the departments to act as the authorized representative of the heads of departments to hear and decide appeals by contractors from the decisions of contracting officers, has also interpreted Article 15 214 of the standard contract as not including, in its expression "disputes concerning questions of fact", disagreements as to the interpretation of written contracts. Thus these Boards have, at the urging of the Government, dismissed appeals because they involved such questions. Appeal of *W. F. Trimble & Son Co.*, 1 CCF. 47, 48; Appeal of *Fred A. M. de Groot, Inc.*, 1 CCF. 148, 149; Appeal of *Central Engineering & Contracting Corporation*, 3 CCF 989, 992; Appeal of *Ross Engineering Company*, 3 CCF. 1153, 1155.

In the current "Charter for the Armed Services Board of Contract Appeals", effective May 1, 1945, modified June 30, 1949, in paragraph 4 appears this language:

When an appeal is taken pursuant to a disputes clause in a contract which limits appeals to disputes concerning questions of fact, the board may nevertheless in its discretion hear, consider, and decide all questions of law necessary for the complete adjudication of the issue.

If the Board "in its discretion" chose not to consider and decide the pertinent questions of law it would not, presumably, decide the case, hence resort to a court would seem to be open to the contractor. The draftsmen of the charter were apparently using the expression "questions of law" with the analytically inaccurate but judicially common meaning described above. The Board, acting under the charter, treats questions of the interpretation of contracts as "questions of law" and decides them, or refuses to decide them, in its discretion. See Appeal of *B. G. Cury Co.*, ASBCA No. 227, Oct. 27, 1949; *Id.* ASBCA No. 228, Oct. 27, 1949; *Id.* ASBCA No. 286, Nov. 21, 1949; *Erman Howell Division, Luria Steel and Trading Corporation*, ASBCA No. 188, Nov. 29, 1949; *Franklin Iron and Metal Co.*, ASBCA No. 194, Nov. 30, 1949. We think it would be intolerable that this court should refuse to consider claims involving interpretation of contracts, when the departmental board is directed to hear them only "in its discretion." Is the contractor supposed to have agreed that he may have a departmental ruling

only if the departmental board chooses to give him one; that he may find out whether they will give him one only by going to the trouble and expense of preparing the case for the board, but
215 that if they do choose to give him a ruling, it will be final?

When the Boards have decided questions of interpretation on appeal, they have made it plain that they were doing so, not because the "disputes concerning questions of fact" clause of the contract authorized them to do it, but because the plaintiff had asked for the decision and the head of the department had authorized the board to make it. See Appeal of *Robert E. McKee*, BCA No. 1617, Jan. 21, 1948; Appeal of *S. K. Jones Construction Co.*, BCA No. 1619, Feb. 6, 1948. See our decision of today in *McWilliams Dredging Co. v. United States*, No. 48894, for an explanation of why such a decision of the Board does not foreclose the contractor from litigating the question in a court.

We now consider the plaintiff's claims upon their merits. The findings are long and detailed and the details will not be repeated in this opinion.

Claim No. 1

Findings 23 to 32 relate to this claim. We have concluded that no substantial extra costs were incurred by the plaintiff because of its excavation in Area A, rather than in higher ground, except for the first two days of excavation in that area. The plaintiff has not proved what its extra costs were for those two days, and therefore cannot recover on this claim.

Claim No. 2

Findings 33 to 44 relate to this claim. The plaintiff cannot recover upon this claim. We have found that the material here in question was stockpiled for the plaintiff's convenience for future use, and was so used when the embankment had been built up to a height convenient for its use.

Claim No. 3

Findings 45 to 50 relate to this claim. Under the terms of the Extra Work Order No. 6, the plaintiff was entitled to be paid the scheduled price of 35 cents per cubic yard for rehandling 1,966 cubic yards of material, a total amount of \$688.10, which plaintiff is entitled to recover.

Claim No. 4

Findings 51 to 63 relate to this claim. We have concluded that, as to the excavation below elevation 7,528, the contract did not require the plaintiff to perform this unexpectedly difficult and ex-

pensive work for the price named in the schedule. It is entitled to recover its extra costs, amounting to \$497.97.

Claims Nos. 6 and 10

Findings 65 to 80 relate to these claims. The Government required the plaintiff to insert tile drains embedded in gravel to keep the trenches dry while they were being filled with impervious material. The plaintiff contends that the much cheaper method of open ditches would have served that purpose. We are not persuaded that open ditches would have been effective. The plaintiff cannot recover on these claims.

Claims Nos. 7 and 8

Findings 80 to 87 relate to these claims. The tile drains here in question were not provided for in the contract. As they were constructed, they served the plaintiff's convenience in drying out the area for the placement of concrete and for other work, but, as constructed, they also permanently benefitted the Government by being left in place as an additional safeguard against upward pressure of ground water against the concrete floor of the outlet channel. The plaintiff may recover \$200 upon this claim.

Claim No. 11

Findings 88 to 92 relate to this claim. The work here involved was necessary for the unwatering of the foundation, and the plaintiff was obligated by the contract to do it. It cannot recover for its cost.

Claim No. 17

Findings 97 to 124 relate to this claim. Paragraph 10 of the specifications quoted in Finding 14 provides that when the contractor is ordered to perform extra work not covered by the specifications or included in the schedule, and when no price for the work can be set by agreement, the work shall be paid for at actual necessary cost as determined by the contracting officer, plus 10 percent for superintendence, general expense and profit. The dispute in this case is as to the amount of the actual cost of the work. The contracting officer agreed with the plaintiff as to the hours of labor and rates of pay of the workmen engaged, as to the hours of use of equipment, except in specific instances, and as to the cost of materials used. The disagreement was and is with regard to the allowance to be made for the use of the plaintiff's equipment in performing the extra work. The contracting officer computed the allowance for the use of the equipment and its operating expense at \$145,230.07, and awarded the plaintiff \$44,208.45 in addition to the amounts which had been currently

paid. The award was rejected and has not been paid to the plaintiff, and in its petition it claims \$181,721.10 on this item.

We have found that, using proper accounting methods to determine a proper allowance for the use of the plaintiff's equipment, its extra costs, in addition to the amount currently paid, were \$155,748.44. One error in the contracting officer's method of accounting was that he took the schedule of rental charges for the use of a contractor's own equipment, which schedule was promulgated by the Bureau of Reclamation, in effect divided the annual rental specified in the schedule by the number of hours which the machine could work if it worked every day in the month and every hour of the working day, during the number of months specified in the schedule as being proper working months for the machine in question in the area in question, and used that quotient as the rate per hour for the use of the plaintiff's machines. It then applied the hourly rate so derived to the actual number of hours which the plaintiff's machines worked on the job covered by this claim. The hourly rate thus derived was completely unrealistic and unfair. Annual rental rates, such as those promulgated by the Bureau of Reclamation, are not based upon the false assumption that such machines work every hour of every day, with no interruptions on account of weather, necessary minor repairs or for other reasons. These losses of
218 time are not supposed to be at the expense of the owner, when in fact the machine is, at the time, being devoted to the job of the hirer.

An error more costly to the contractor was the contracting officer's computation of the costs of current repairs and maintenance of the machines. The contracting officer was aware of the plaintiff's actual costs, incurred during the period, and could have readily computed a proper hourly rate for each machine. But he disregarded the actual costs, presuming that they were excessive and must have included major repairs and general overhauling. There was no substantial evidence to support that view, since the records showed that none of the machines was out of service long enough for such treatment. The contracting officer assigned arbitrary hourly figures for the costs of repairs and maintenance of the machines, and it is hard to tell how he hit upon such figures. For example, he awarded substantially the same hourly rate for a \$205 jack hammer that he did for a \$20,000 Euclid tractor truck, and, only a few cents more for a \$39,000 drafline.

We conclude that the plaintiff did not agree, by signing this contract, to be bound by administrative decisions made in disregard of the practices of trade, of proper accounting methods, and of the known facts as to actual costs. Nor did it agree to be bound by computations based on arbitrarily chosen figures which on their face show that they must be wrong. We conclude that the administrative treatment of this important claim of the plaintiff was

arbitrary and capricious. The plaintiff may recover \$155,748.44 on this claim.

Claim No. 20

Findings 127 to 143 relate to this claim. The contracting officer decided that the excavation here in question was "stripping," while the plaintiff claims that it was trench excavation. We have concluded that it did not come within either of these classifications in the specifications, as properly interpreted. It was more nearly comparable to borrow excavation than to either of the other classifications and the plaintiff is entitled to \$6,125.49, which includes the \$1,279.95 awarded by the contracting officer but rejected by the plaintiff.

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Claim No. 27

Findings 144 to 146 relate to this claim. The plaintiff cannot recover. It was paid all that it was entitled to under its contract.

Claim No. 31

Findings 147 to 158 relate to this claim. The contracting officer's decision that the neat lines, and not the lines to which the plaintiff actually excavated, should be used in measurement for payment was in the circumstances reasonable, and the plaintiff cannot recover on this claim.

Claim No. 33

Findings 159 to 166 relate to this claim. The Government had the right to change the design of the work, as it did here, and the plaintiff was obligated to do the redesigned work at contract rates. It cannot recover on this claim.

Claim No. 34

Findings 167 to 172 relate to this claim. We conclude, rather doubtfully, that the temporary filling of the excavation by the plaintiff, rather than leaving it open to await the change of design which the Government had the right to make, was not a necessary consequence of the change of design, but was an act done by the plaintiff of its own choice. The plaintiff cannot recover upon this claim.

Claim No. 35

Findings 173 to 179 relate to this claim. The contract provided for additional payment for extra rolling of the material in the embankment, except under certain circumstances. The plaintiff was ordered to do the extra rolling, and expected to be paid for it. When its payment arrived, nothing was included for the extra rolling. The plaintiff requested payment, but payment was refused on

the ground that it was not possible, after the rolling had been completed, to verify the yardage involved. The yardage of extra rolling is sufficiently verified and the plaintiff is entitled to \$1,500.83 on this claim.

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Claim No. 37

Findings 180 to 186 relate to this claim. We have found that the excavation covered by it has already been paid for. The claim must, therefore, be denied.

Upon the contested claims the plaintiff is entitled to recover \$164,760.83, and upon the uncontested ones referred to earlier in this opinion \$7,541.40, making a total of \$172,302.23.

It is so ordered.

LITTLETON, *Judge*.

HOWELL, *Judge*; WHITAKER, *Judge*; and JONES, *Chief Judge*, concur.

221-222 JUDGMENT OF THE COURT—June 5, 1950

Upon the special findings of fact, which are made a part of the judgment herein, the court concludes as a matter of law that the plaintiff is entitled to recover.

It is therefore adjudged and ordered that plaintiff recover of and from the United States the sum of one hundred seventy-two thousand three hundred two dollars and twenty-three cents (\$172,302.23).

223-224 PROCEEDINGS AFTER ENTRY OF JUDGMENT

On June 8, 1950, plaintiffs filed a motion to amend special findings of fact.

On June 27, 1950, the court filed the following order on said motion:

Order

This case comes before the Court on plaintiffs' motion to amend the special findings of fact filed herein June 5, 1950, and, on consideration thereof,

It is ordered this twenty-seventh day of June, 1950, that said motion be and the same is allowed, and said findings are amended in the following particulars:

Finding 116, at the end of the tenth line on page 72, ending with the word "expense" add the following:

The method of computation of hourly rental rates for equipment used by the contracting officer and the head of the department was

arbitrary and capricious, and the result arrived at by that method was grossly erroneous.

225-226 Page 74, after the figures "\$317,475.72" at the beginning of the eighth line of the second full paragraph strike out the word "By" and amend the balance of the sentence so that it will read as follows:

Dividing the annual rates so determined by the maximum number of hours this equipment could have been used or its actual use, whichever was greater, gives the rate per hour applicable to actual performance.

Amend finding 117, page 75, by adding at the end of the second full paragraph the following:

The method of computation of plaintiffs' costs for the repair and maintenance of its equipment, used by the contracting officer and the head of the department, was arbitrary and capricious, and the result arrived at by that method was grossly erroneous.

The findings filed as of June 5, 1950 as thus amended are to stand.

BY THE COURT

/s/ MARVIN JONES,
Chief Judge.

227-228 On August 14, 1950, on motion made therefor and allowed by the court, defendant filed a motion for a new trial.

On October 2, 1950, the court entered the following order on said motion:

Order

It is ordered this 2nd day of October, 1950, that the defendant's motion for new trial be and the same is hereby overruled.

On February 12, 1951, the parties filed a stipulation designating parts of the record material to the errors assigned in defendant's request for record in re certiorari as follows:

Stipulation of the Parties Designating Parts of the Record Material to the Errors Assigned

The defendant, in the above-entitled case has notified the plaintiffs of its intention to file without unnecessary delay a petition for a writ of certiorari and has presented counsel for plaintiffs with its motion for leave to proceed under proposed Rule 57(d), to which this stipulation is attached, together

with its assignment of errors similarly attached. Now, in order to simplify and expedite these proceedings, the parties do hereby stipulate and agree through their respective attorneys that the pleadings, findings of fact, conclusions of law, judgment and opinion of this Court are material to the errors assigned and that the following additional portions of the record include all the parts thereof which either party deems to be material to the errors assigned:

1. The portions of the transcript bearing on Claim No. 17, namely, pp. 1-3, 9-22, 27, 62-63, 88, 99-100, 109, 251-276, 416-417, 446, 521-535, 576, 639-641, 671-676, 710-715, 763-773, 809-823, 836-837, 861-924, 925-928, 960-977, 1017-1018, 1049-1052, 1061, 1068-1069, 1073-1083, 1090-1093, 1116-1118, 1169-1171, 1242-1243, 1486, 1510-1519, 1521-1522, 1541-1752, 1754-1755, 231-232, 1776-1787, 1792-1794, 2197-2207, 2212-2231, 2245-2249, 2361-2442, all inclusive. (While only the foregoing portions of the transcript are deemed material by either of the parties, it is respectfully suggested that it might prove less difficult as a matter of mechanics to transmit the entire transcript to the Supreme Court than to excerpt the pages indicated. If the entire transcript were forwarded, the parties should nevertheless be limited to the designated pages which alone would constitute part of the record properly before the Supreme Court.)

2. Plaintiffs' Exhibit A.
3. Plaintiffs' Exhibit B-2.
4. Plaintiffs' Exhibit B-5.
5. Plaintiffs' Exhibit C.
6. Plaintiffs' Exhibit D.
7. Plaintiffs' Exhibit E.
8. Plaintiffs' Exhibit G.
9. Plaintiffs' Exhibit H.
10. Plaintiffs' Exhibit 17.
11. Plaintiffs' Exhibit 17-A.
12. Plaintiffs' Exhibit 17-B.
13. Plaintiffs' Exhibit 17-C.
14. Plaintiffs' Exhibit 17-D.
15. Plaintiffs' Exhibit 17-E.
16. Plaintiffs' Exhibit 17-F.
17. Defendant's Exhibit C.
18. Defendant's Exhibit F.
19. Defendant's Exhibit G.
20. Defendant's Exhibit K.
21. Defendant's Exhibit N.
22. Defendant's Exhibit P.
23. Defendant's Exhibit Q.
24. Defendant's Exhibit R.

- 25. Defendant's Exhibit S.
- 26. Defendant's Exhibit T.
- 27. Defendant's Exhibit 17-1.
- 28. Defendant's Exhibit 17-A.
- 29. Defendant's Exhibit 17-B.
- 30. Defendant's Exhibit 17-C.
- 31. Defendant's Exhibit 17-D.
- 32. Defendant's Exhibit 17-E.
- 233 33. Defendant's Exhibit 17-F.
- 34. Defendant's Exhibit 17-G.
- 35. Defendant's Exhibit 17-H.
- 36. Defendant's Exhibit 17-I.
- 37. Defendant's Exhibit 17-J.
- 38. Defendant's Exhibit 17-K.
- 39. Defendant's Exhibit 17-L.
- 40. Defendant's Exhibit 17-M.
- 41. Defendant's Exhibit 17-N.
- 42. Defendant's Exhibit 17-O.
- 43. Defendant's Exhibit 17-P.
- 44. Defendant's Exhibit 17-Q.
- 45. Defendant's Exhibit 17-R.
- 46. Defendant's Exhibit 17-S.
- 47. Defendant's Exhibit 17-T.
- 48. Defendant's Exhibit 17-U.
- 49. Defendant's Exhibit 17-V.
- 50. Defendant's Exhibit 17-W.
- 51. Defendant's Exhibit 17-X.
- 52. Defendant's Exhibit 17-Y.
- 53. Defendant's Exhibit 17-Z.
- 54. Defendant's Exhibit 17-AA.
- 55. Defendant's Exhibit 17-BB.
- 56. Defendant's Exhibit 21-A.

Respectfully submitted,

(S.) NEWELL A. CLAPP,

Acting Assistant Attorney General.

(S.) KING AND KING,

Attorneys for Plaintiffs.

NOTE: The Entire Transcript of Testimony Together with the Exhibits as Listed Above Accompany this Record under Separate Cover.

234-235 Clerk's Certificate to foregoing transcript omitted in printing.

Supreme Court of the United States

ORDER EXTENDING TIME TO FILE PETITION FOR WRIT OF CERTIORARI

Upon consideration of the application of counsel for petitioner,
It is ordered that the time for filing petition for writ of certiorari
in the above-entitled cause be, and the same is hereby, extended to
and including March 1, 1951.

FRED M. VINSON,

Chief Justice of the United States

Dated this 26th day of December, 1950.

In the Supreme Court of the United States

October Term, 1950

STIPULATION AS TO PARTS OF RECORD TO BE PRINTED

In a stipulation approved by the Court of Claims, the parties have designated for certification to this Court a number of portions of the record material to the errors assigned by the United States in its petition for a writ of certiorari in addition to the pleadings, findings of fact, conclusions of law, judgment and opinion of the Court of Claims.

Now, subject to the approval of this court, the parties do hereby stipulate and agree that, for purposes of the petition for certiorari, the portions of the record to be printed should be as follows:

1. Pleadings.
2. Findings of Fact.
3. Conclusions of Law.
4. Judgment.
5. Opinion.
6. Order of June 27, 1950 amending findings of fact.
7. Motion for new trial.
8. Order denying motion for new trial.
9. This stipulation.

It is further agreed that either party may make reference to the unprinted materials in the record and that this stipulation is without prejudice to the right of either party to designate additional portions of the record to be printed in the event certiorari is granted.

PHILIP B. PERLMAN,

Solicitor General.

HERMAN J. GALLOWAY,

Attorney for Respondents.

February 23, 1951

Supreme Court of the United States

October Term, 1950

No. 534

THE UNITED STATES, PETITIONER

VS.

MARTIN WUNDERLICH ET AL

Order allowing certiorari

Filed May 7, 1951

The petition herein for a writ of certiorari to the United States Court of Claims is granted. The case is transferred to the summary docket.

And it is further ordered that the duly certified copy of the transcript of the proceedings below which accompanied the petition shall be treated as though filed in response to such writ.